LCD TV

chassis FL10.0

SERVICE MANUAL

Contents

19”	LC190EM1	EMERSON	(Serial No. : DS1A)
19”	LC190EM1	EMERSON	(Serial No. : DS3A)
19”	LC190EM1	EMERSON	(Serial No. : DS4A)
19”	LC190EM1	EMERSON	(Serial No. : TH1A)
19”	19MF330B/F7	MAGNAVOX	(Serial No. : DS1A)
19”	19MF330B/F7	MAGNAVOX	(Serial No. : DS3A)
19”	LC190SL1	SYLVANIA	(Serial No. : DS1A)
19”	LC190SL1	SYLVANIA	(Serial No. : DS2A)
19”	LC190SL1	SYLVANIA	(Serial No. : TH1A)
19”	LC190SL1	SYLVANIA	(Serial No. : TH2A)
19”	LC190SS1	SYLVANIA	

© 2010 Funai Electric Co., Ltd.

All rights reserved. No part of this manual may be reproduced, copied, transmitted, disseminated, transcribed, downloaded or stored in any storage medium, in any form or for any purpose without the express prior written consent of Funai. Furthermore, any unauthorized commercial distribution of this manual or any revision hereto is strictly prohibited.

Information in this document is subject to change without notice. Funai reserves the right to change the content herein without the obligation to notify any person or organization of such changes.

FUNAI with the design is a registered trademark of Funai Electric Co., Ltd and may not be used in any way without the express written consent of Funai. All other trademarks used herein remain the exclusive property of their respective owners. Nothing contained in this manual should be construed as granting, by implication or otherwise, any license or right to use any of the trademarks displayed herein. Misuse of any trademarks or any other content in this manual is strictly prohibited. Funai shall aggressively enforce its intellectual property rights to the fullest extent of the law.

A01N4UH/N9UH/NFUH/N6UT/N0UH/NGUH/N3UH/N8UH/N5UT/NDUT/N1UH
100830

IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Funai Equipment. The service procedures recommended by Funai and described in this service manual are effective methods of performing service operations. Some of these service special tools should be used when and as recommended.

It is important to note that this service manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Funai could not possibly know, evaluate and advice the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Funai has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Funai must first use all precautions thoroughly so that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

The LCD panel is manufactured to provide many years of useful life. Occasionally a few non active pixels may appear as a tiny spec of color. This is not to be considered a defect in the LCD screen.

TABLE OF CONTENTS

Specifications 1-1
Important Safety Precautions 2-1
Standard Notes for Servicing 3-1
Cabinet Disassembly Instructions 4-1
Electrical Adjustment Instructions 5-1
How to Initialize the LCD TV 6-1
Firmware Renewal Mode 7-1
Troubleshooting 8-1
Block Diagrams 9-1
Schematic Diagrams / CBA and Test Points 10-1
Waveforms 11-1
Wiring Diagram 12-1
Exploded Views 13-1
Parts List 14-1
Revision History 15-1

SPECIFICATIONS

< TUNER / NTSC >

ANT. Input ---------- 75 Ω Unbal., F type

Description	Condition	Unit	Nominal	Limit
1. AFT Pull-In Range	---	MHz	±2.3	±2.1
2. Synchronizing Sens.	TV.ch.4 CA.ch.31 CA.ch.87	dBμ dBμ dBμ	18 18 18	20 20 23

< TUNER / ATSC >

Description	Condition	Unit	Nominal	Limit
1. Received Freq. Range (-28dBm)	---	kHz	---	±100
2. ATSC Dynamic Range (min / max)	ch.4 ch.10 ch.41	dBm dBm dBm	--- --- ---	-76/0 -76/0 -76/+4

< LCD PANEL >

Description	Condition	Unit	Nominal	Limit
1. Native Pixel Resolution	Horizontal Vertical	pixels pixels	1366 768	--- ---
2. Brightness (w / filter)	---	cd/m^2	230	---
3. Viewing Angle	Horizontal Vertical	° °	-85 to 85 -80 to 80	--- ---

< VIDEO >

Description	Condition	Unit	Nominal	Limit
1. Over Scan	Horizontal Vertical	% %	5 5	5±5 5±5
2. Color Temperature	--- x y	°K	12000 0.272 0.278	--- ±3% ±3%
3. Resolution (composite video)	Horizontal Vertical	line line	400 350	--- ---

< AUDIO >

All items are measured across 8 Ω load at speaker output terminal with L.P.F.

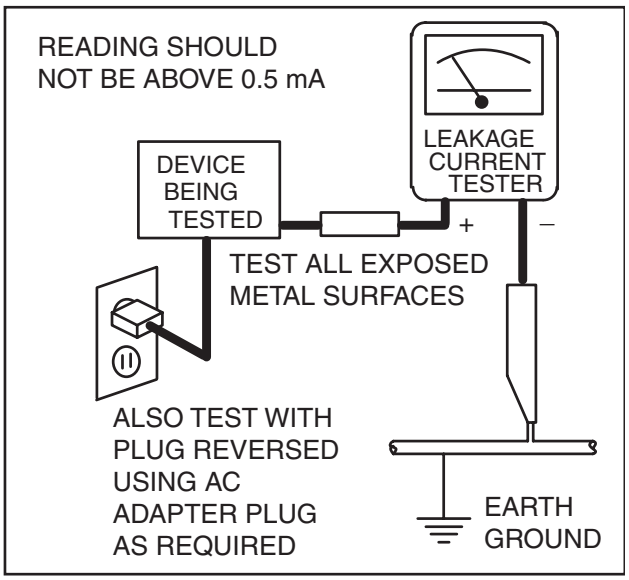
Description	Condition	Unit	Nominal	Limit
1. Audio Output 10% Distortion (ATSC 0 dBfs)	Lch/Rch	W	3.0/3.0	2.6/2.6
2. Audio Distortion (NTSC)	500mW: Lch/Rch	%	0.5/0.5	2.0/2.0
3. Audio Freq. Response (NTSC)	–6dB: Lch –6dB: Rch	Hz Hz	70 to 10 k 70 to 10 k	--- ---

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, our products are strictly inspected for recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Safety Precautions for LCD TV Circuit

1. **Before returning an instrument to the customer,** always make a safety check of the entire instrument, including, but not limited to, the following items:
   - **a.** Be sure that no built-in protective devices are defective and have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**
   - **b.** Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) spacing between the Liquid Crystal Panel and the cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.
   - **c. Antenna Cold Check -** With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohm or greater than 5.2 megohm, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.
   - **d. Leakage Current Hot Check -** With the instrument completely reassembled, plug the AC line cord directly into a 120 V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milli-ampere. Reverse the instrument power cord plug in the outlet and repeat the test.



ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the Liquid Crystal Panel.

3. **Design Alteration Warning -** Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions, including, but not limited to circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions will void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.
4. **Hot Chassis Warning -**
   a. Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and maybe safety-serviced without an isolation transformer only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC power source. To confirm that the AC power plug is inserted correctly, with an AC voltmeter, measure between the chassis and a known earth ground. If a voltage reading in excess of 1.0 V is obtained, remove and reinsert the AC power plug in the opposite polarity and again measure the voltage potential between the chassis and a known earth ground.
   b. Some TV receiver chassis normally have 85V AC(RMS) between chassis and earth ground regardless of the AC plug polarity. This chassis can be safety-serviced only with an isolation transformer inserted in the power line between the receiver and the AC power source, for both personnel and test equipment protection.
   c. Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulation material that must not be defeated or altered.
5. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: a. near sharp edges, b. near thermally hot parts-be sure that leads and components do not touch thermally hot parts, c. the AC supply, d. high voltage, and, e. antenna wiring. Always inspect in all areas for pinched, out of place, or frayed wiring. Check AC power cord for damage.
6. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.
7. **Product Safety Notice -** Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ⚠ on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The product's safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are strictly inspected to confirm they comply with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Precautions during Servicing

A. Parts identified by the ⚠ symbol are critical for safety.
Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

1) Wires covered with PVC tubing
2) Double insulated wires
3) High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

1) Insulation Tape
2) PVC tubing
3) Spacers
4) Insulators for transistors.

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heat sinks, oxide metal film resistors, fusible resistors, etc.)

G. Check that replaced wires do not contact sharp edged or pointed parts.

H. When a power cord has been replaced, check that 5~6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC supply outlet.

L. When installing parts or assembling the cabinet parts, be sure to use the proper screws and tighten certainly.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1: Ratings for selected area

AC Line Voltage	Region	Clearance Distance (d), (d')
110 to 130 V	U.S.A. or Canada	≥ 3.2 mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

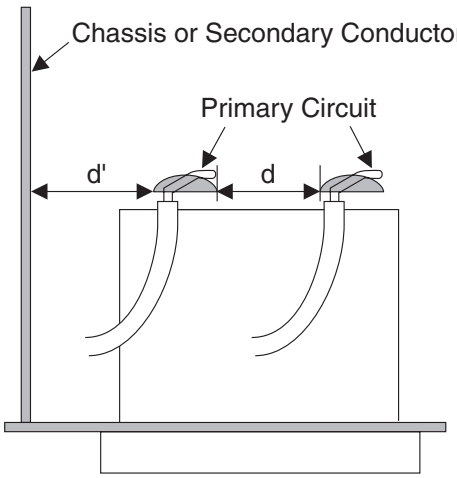


Fig. 1

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method: (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See Fig. 2 and following table.

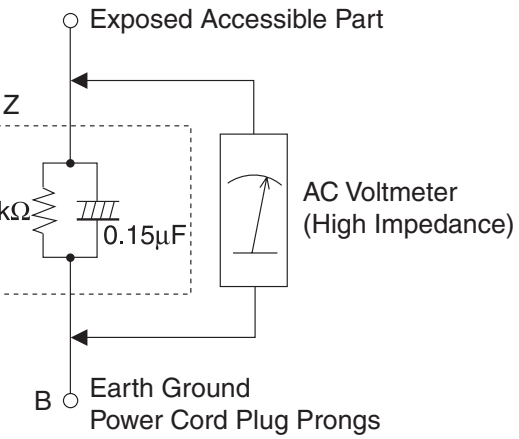


Fig. 2

Table 2: Leakage current ratings for selected areas

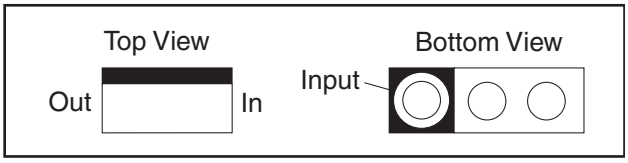
AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
110 to 130 V	U.S.A. or Canada	0.15 μF CAP. & 1.5 kΩ RES. Connected in parallel	i ≤ 0.5 mA rms	Exposed accessible parts

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

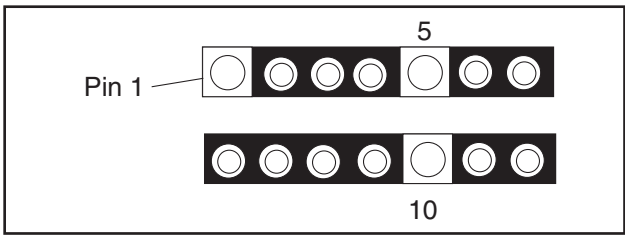
STANDARD NOTES FOR SERVICING

Circuit Board Indications

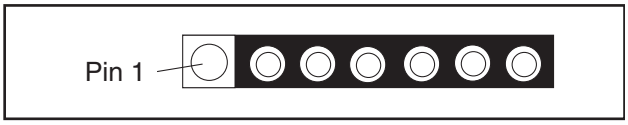
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



2. For other ICs, pin 1 and every fifth pin are indicated as shown.

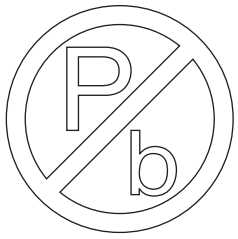


3. The 1st pin of every male connector is indicated as shown.



Pb (Lead) Free Solder

Pb free mark will be found on PCBs which use Pb free solder. (Refer to figure.) For PCBs with Pb free mark, be sure to use Pb free solder. For PCBs without Pb free mark, use standard solder.



Pb free mark

How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

1. Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

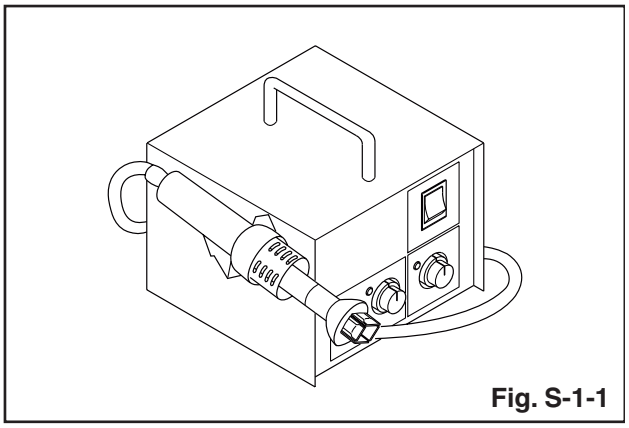


Fig. S-1-1

2. Remove the flat pack-IC with tweezers while applying the hot air.
3. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
4. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

CAUTION:

1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)

3. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

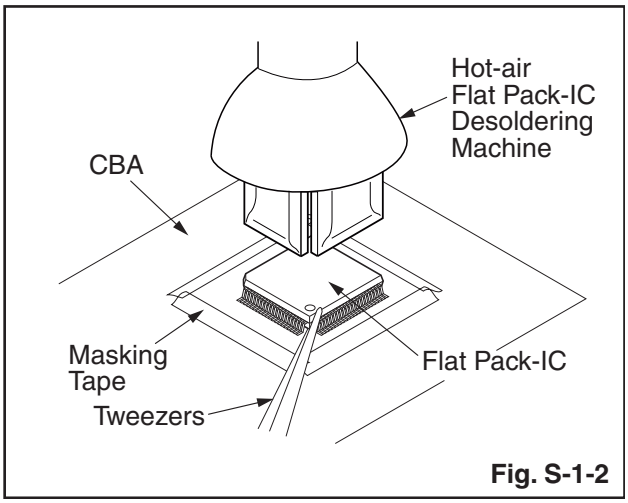


Fig. S-1-2

With Soldering Iron:

1. Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

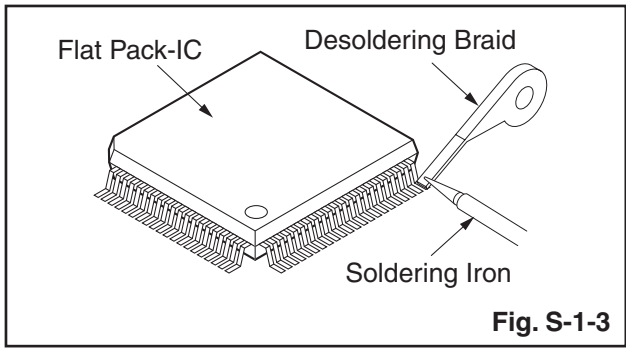


Fig. S-1-3

2. Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

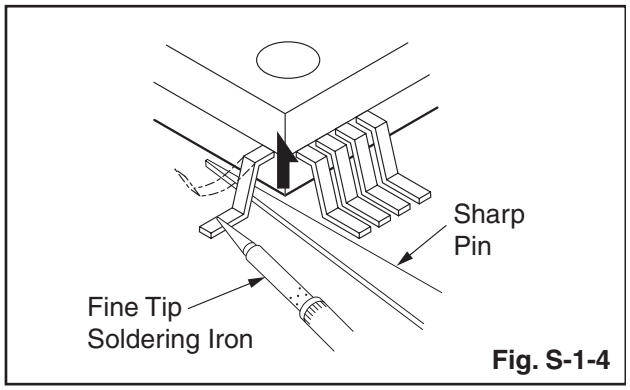


Fig. S-1-4

3. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
4. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

1. Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)
2. Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
3. While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.
4. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
5. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note: When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

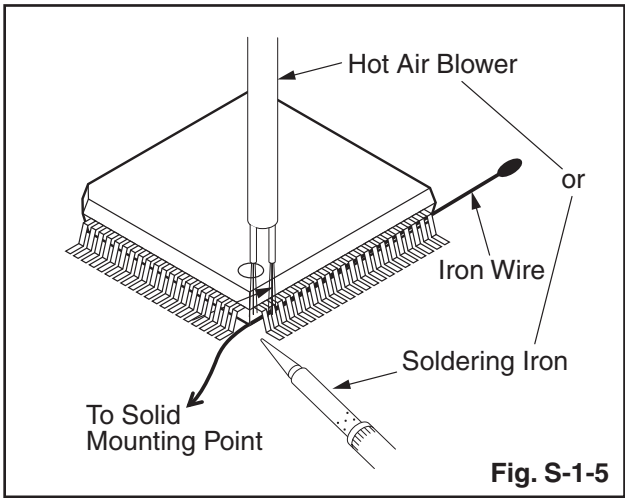


Fig. S-1-5

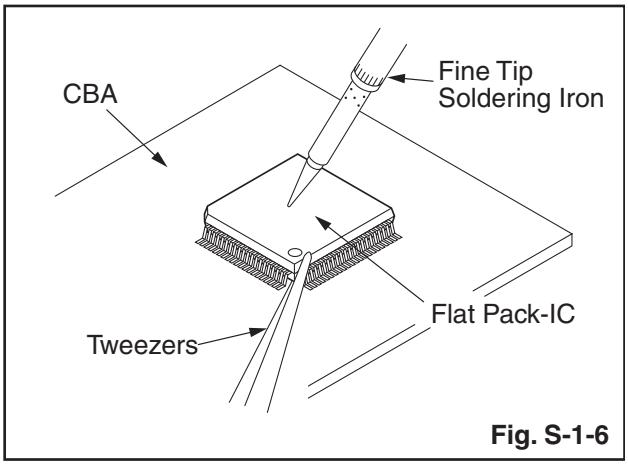


Fig. S-1-6

2. Installation

1. Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.
2. The "●" mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the pin 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. S-1-8.)
3. Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

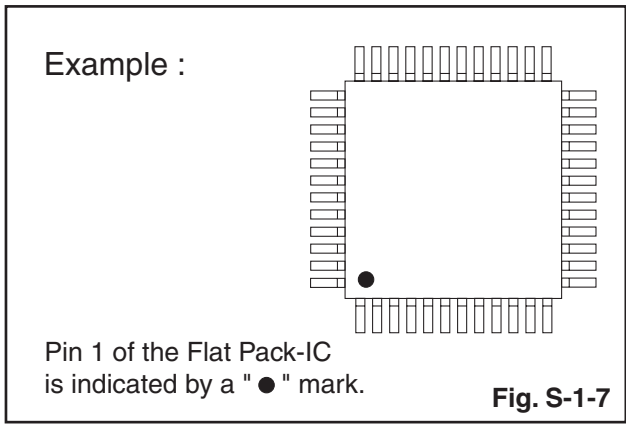


Fig. S-1-7

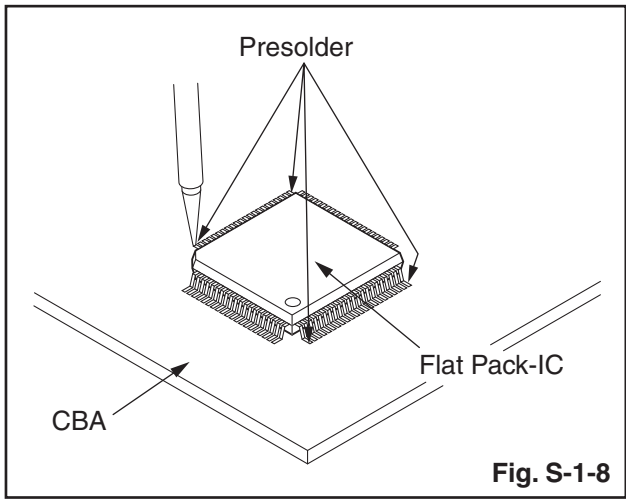


Fig. S-1-8

Instructions for Handling Semi-conductors

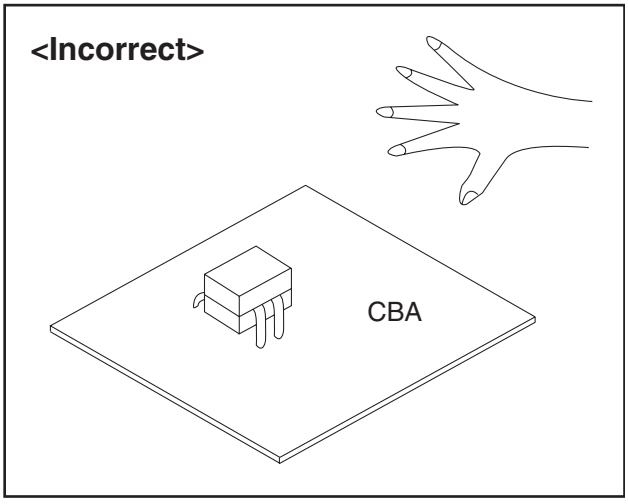
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

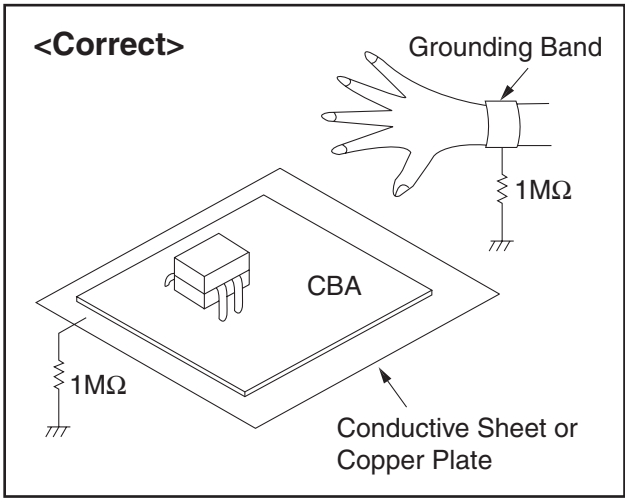
1. Ground for Human Body

Be sure to wear a grounding band (1 MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

Be sure to place a conductive sheet or copper plate with proper grounding (1 MΩ) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.

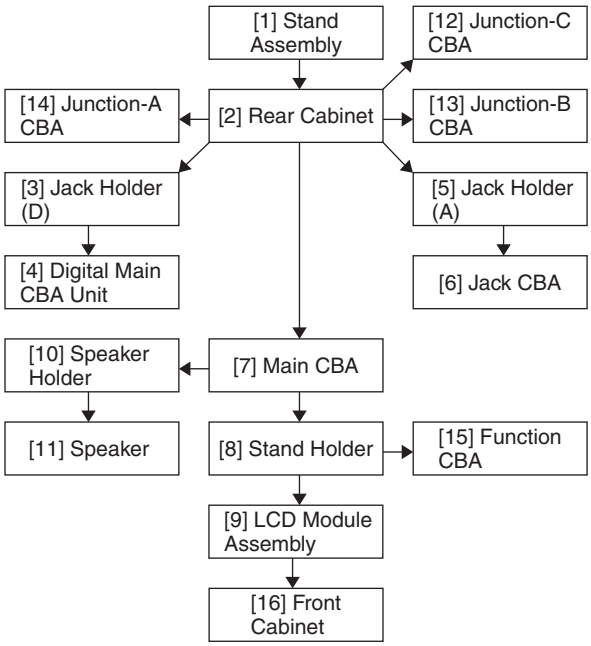




CABINET DISASSEMBLY INSTRUCTIONS [LC190EM1, 19MF330B/F7 (Serial No. : DS1A, DS3A), LC190SS1, LC190SL1 (Serial No. : DS1A, DS2A, TH1A)]

1. Disassembly Flowchart

This flowchart indicates the disassembly steps for the cabinet parts, and the CBA in order to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route and dress the cables as they were.



2. Disassembly Method

Step/ Loc. No.	Part	Removal		
		Fig. No.	Remove/*Unhook/ Unlock/Release/ Unplug/Unclamp/ Desolder	Note
[1]	Stand Assembly	D1	3(S-1)	---
[2]	Rear Cabinet	D1	9(S-2), (S-3), (S-3A), 2(S-4)	---
[3]	Jack Holder(D)	D2	(S-5)	---
[4]	Digital Main CBA Unit	D2 D3	4(S-6), (S-7), 4(S-8), 2(H-1), *CN301, *CN302, *CN3902, Shield Box	---
[5]	Jack Holder(A)	D2	(S-9)	---
[6]	Jack CBA	D2 D3	4(S-10), CN702, *CN861A	---
[7]	Main CBA	D2 D3	10(S-11), *CN102, *CN201, *CN862A, *CN1001, *CN1002	---
[8]	Stand Holder	D2	2(S-12), (S-13)	---
[9]	LCD Module Assembly	D2	----------	---
[10]	Speaker Holder	D2	4(S-14)	---
[11]	Speaker	D2	----------	---
[12]	Junction-C CBA	D2 D3	Desolder	---
[13]	Junction-B CBA	D2 D3	Desolder	---
[14]	Junction-A CBA	D2 D3	Desolder	---
[15]	Function CBA	D2 D3	2(S-15)	---
[16]	Front Cabinet	D2	----------	---
		↓ (1)	↓ (2)	↓ (3)	↓ (4)	↓ (5)

Note:

(1) Order of steps in procedure. When reassembling, follow the steps in reverse order. These numbers are also used as the Identification (location) No. of parts in figures.

(2) Parts to be removed or installed.

(3) Fig. No. showing procedure of part location

(4) Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P = Spring, L = Locking Tab, S = Screw,
H = Hex Screw, CN = Connector
* = Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)

(5) Refer to the following "Reference Notes in the Table."

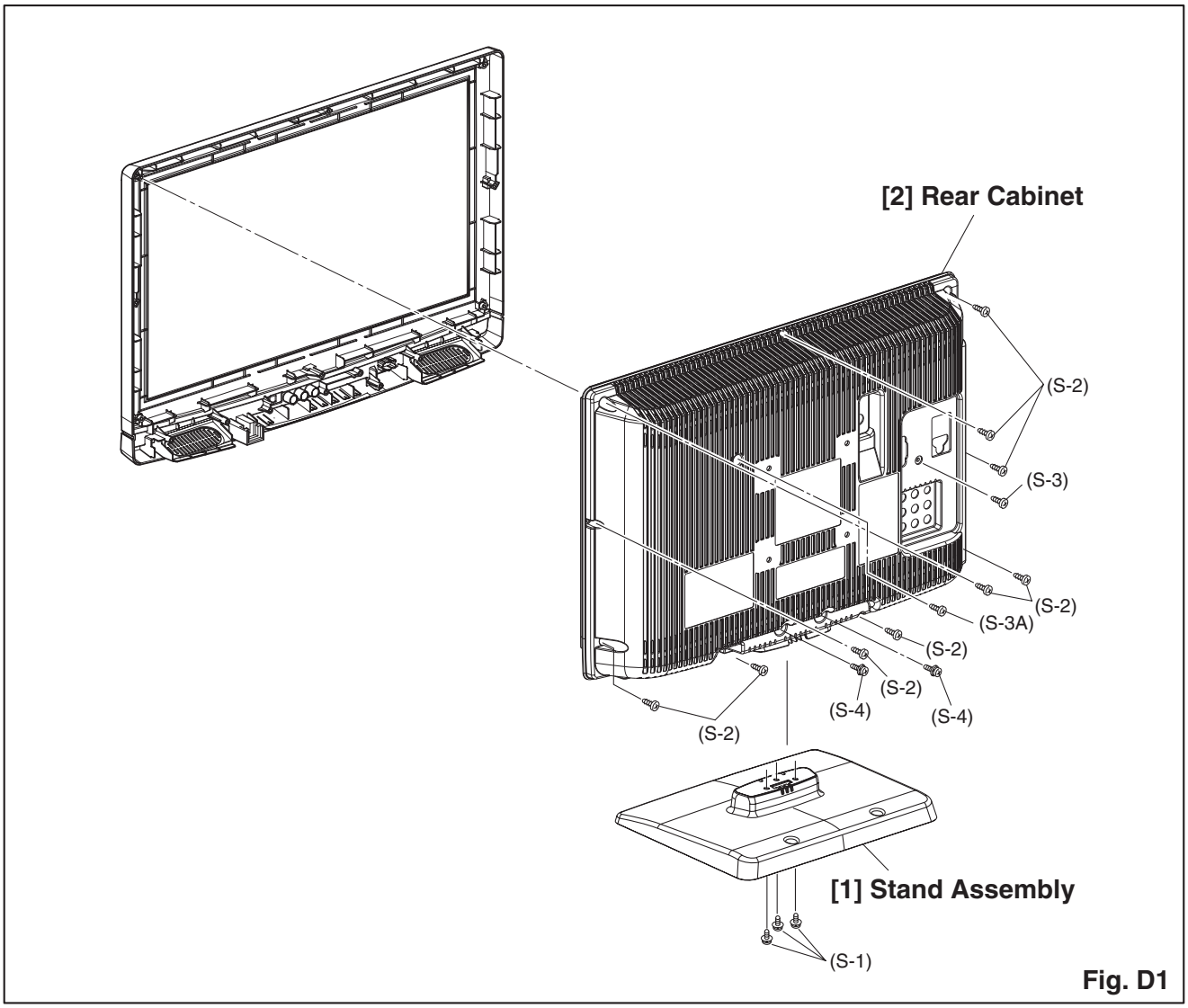


Fig. D1

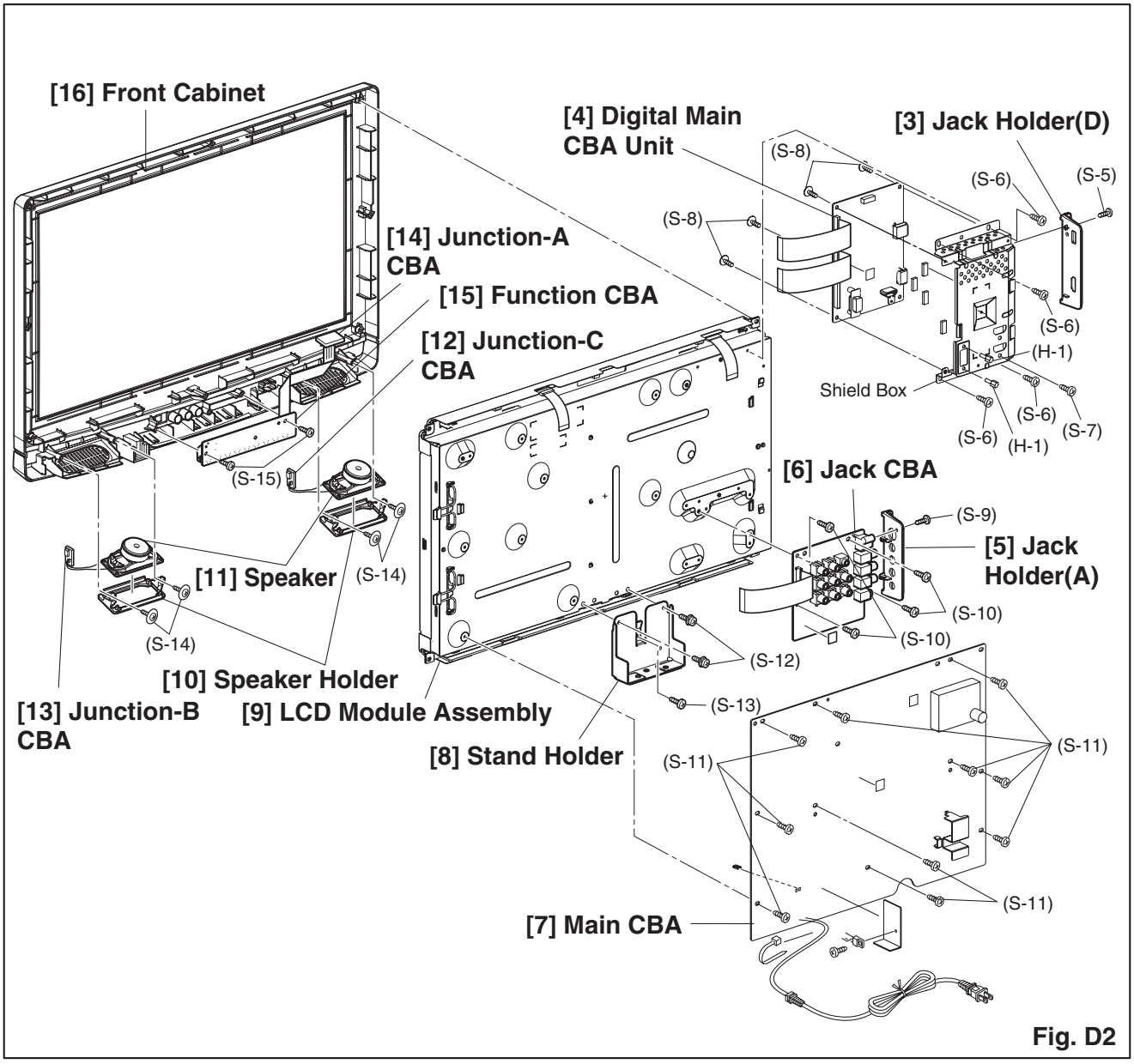

[16] Front Cabinet
[4] Digital Main CBA Unit
[3] Jack Holder(D)
(S-8)
(S-6)
(S-5)
(S-8)
[14] Junction-A CBA
[15] Function CBA
[12] Junction-C CBA
(S-6)
(H-1)
Shield Box
(S-6)
(S-6)
(H-1)
(S-7)
(S-15)
[6] Jack CBA
(S-9)
[5] Jack Holder(A)
[11] Speaker
(S-14)
(S-10)
(S-10)
(S-14)
(S-12)
[10] Speaker Holder
(S-13)
[13] Junction-B CBA
[9] LCD Module Assembly
[8] Stand Holder
(S-11)
(S-11)
(S-11)
[7] Main CBA

Fig. D2

TV Cable Wiring Diagram

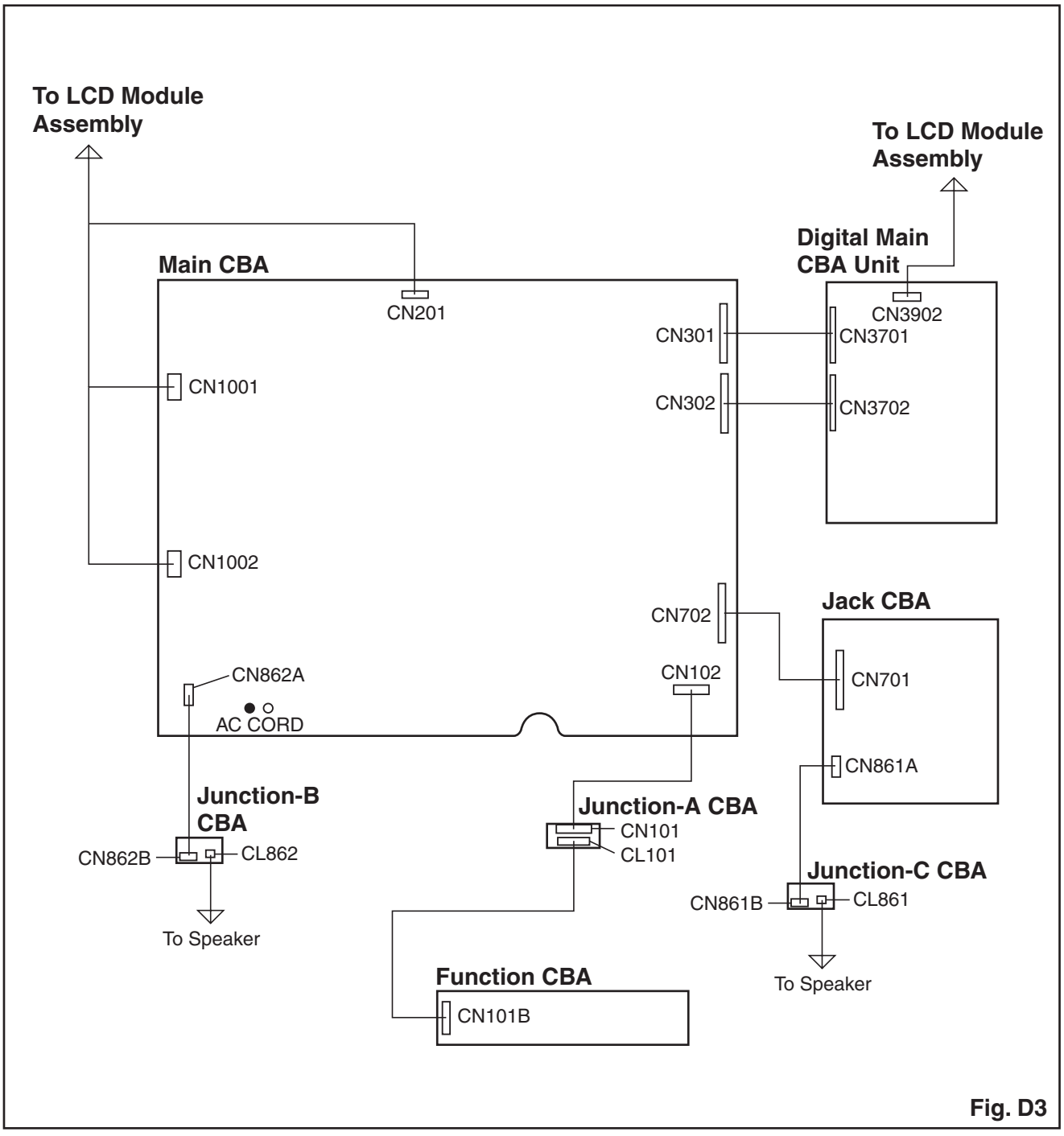
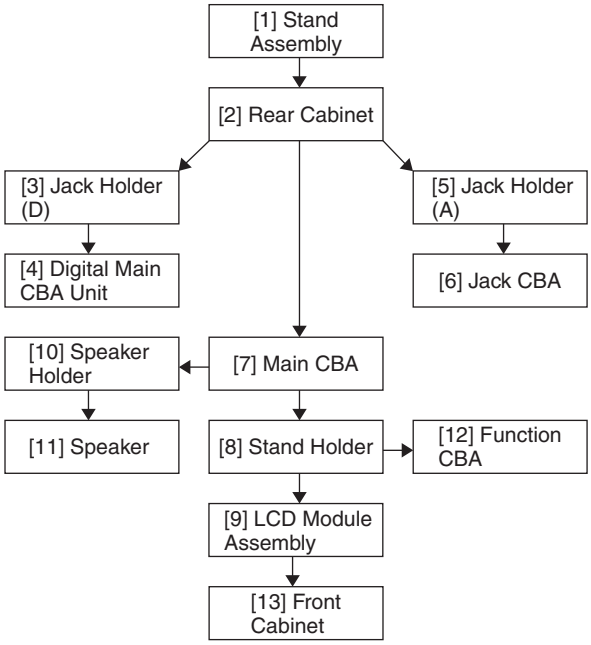


Fig. D3

CABINET DISASSEMBLY INSTRUCTIONS
[LC190SL1 (Serial No. : TH2A)]

1. Disassembly Flowchart

This flowchart indicates the disassembly steps for the cabinet parts, and the CBA in order to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route and dress the cables as they were.



2. Disassembly Method

Step/ Loc. No.	Part	Removal		
		Fig. No.	Remove/*Unhook/ Unlock/Release/ Unplug/Unclamp/ Desolder	Note
[1]	Stand Assembly	D1	3(S-1)	---
[2]	Rear Cabinet	D1	9(S-2), (S-3), (S-3A), 2(S-4)	---
[3]	Jack Holder(D)	D2	(S-5)	---
[4]	Digital Main CBA Unit	D2 D3	4(S-6), (S-7), 4(S-8), 2(H-1), *CN301, *CN302, *CN3902, Shield Box	---
[5]	Jack Holder(A)	D2	(S-9)	---
[6]	Jack CBA	D2 D3	4(S-10), CN702, *CN871	---
[7]	Main CBA	D2 D3	10(S-11), *CN102, *CN201, *CN872, *CN1001, *CN1002	---
[8]	Stand Holder	D2	2(S-12), (S-13)	---
[9]	LCD Module Assembly	D2	----------	---
[10]	Speaker Holder	D2	4(S-14)	---
[11]	Speaker	D2	----------	---
[12]	Function CBA	D2 D3	2(S-15)	---
[13]	Front Cabinet	D2	----------	---
		↓ (3)	↓ (4)	↓ (5)
		↓ (1)	↓ (2)	

Note:

(1) Order of steps in procedure. When reassembling, follow the steps in reverse order. These numbers are also used as the Identification (location) No. of parts in figures.

(2) Parts to be removed or installed.

(3) Fig. No. showing procedure of part location

(4) Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P = Spring, L = Locking Tab, S = Screw,
H = Hex Screw, CN = Connector
* = Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)

(5) Refer to the following "Reference Notes in the Table."

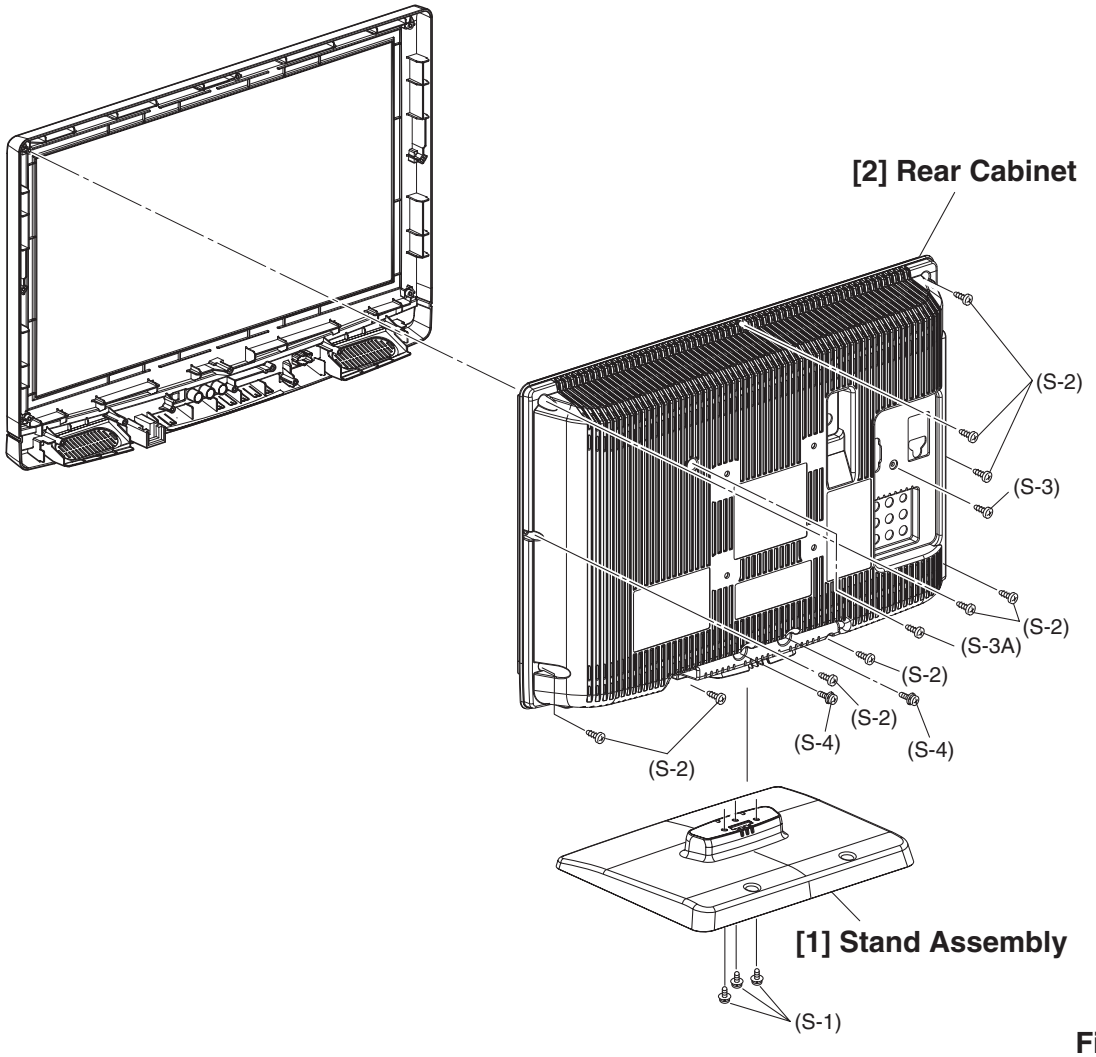


Fig. D1

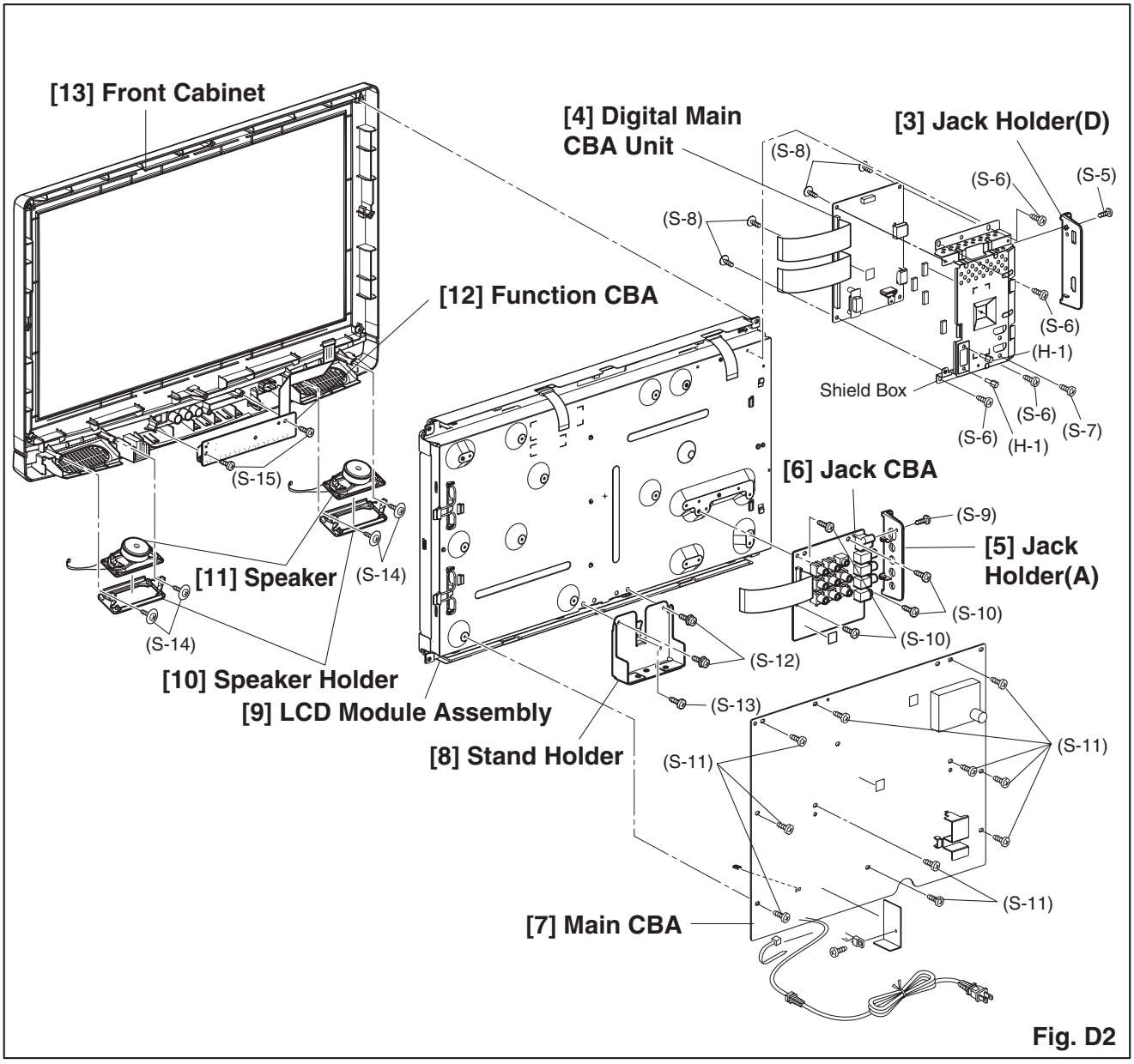

[13] Front Cabinet
[4] Digital Main CBA Unit
[3] Jack Holder(D)
(S-8)
(S-6)
(S-5)
(S-8)
[12] Function CBA
(S-6)
(H-1)
Shield Box
(S-6)
(S-6)
(H-1)
(S-7)
[6] Jack CBA
(S-15)
(S-9)
[5] Jack Holder(A)
[11] Speaker
(S-14)
(S-10)
(S-10)
(S-14)
(S-12)
[10] Speaker Holder
(S-13)
[9] LCD Module Assembly
[8] Stand Holder
(S-11)
(S-11)
(S-11)
[7] Main CBA

Fig. D2

TV Cable Wiring Diagram

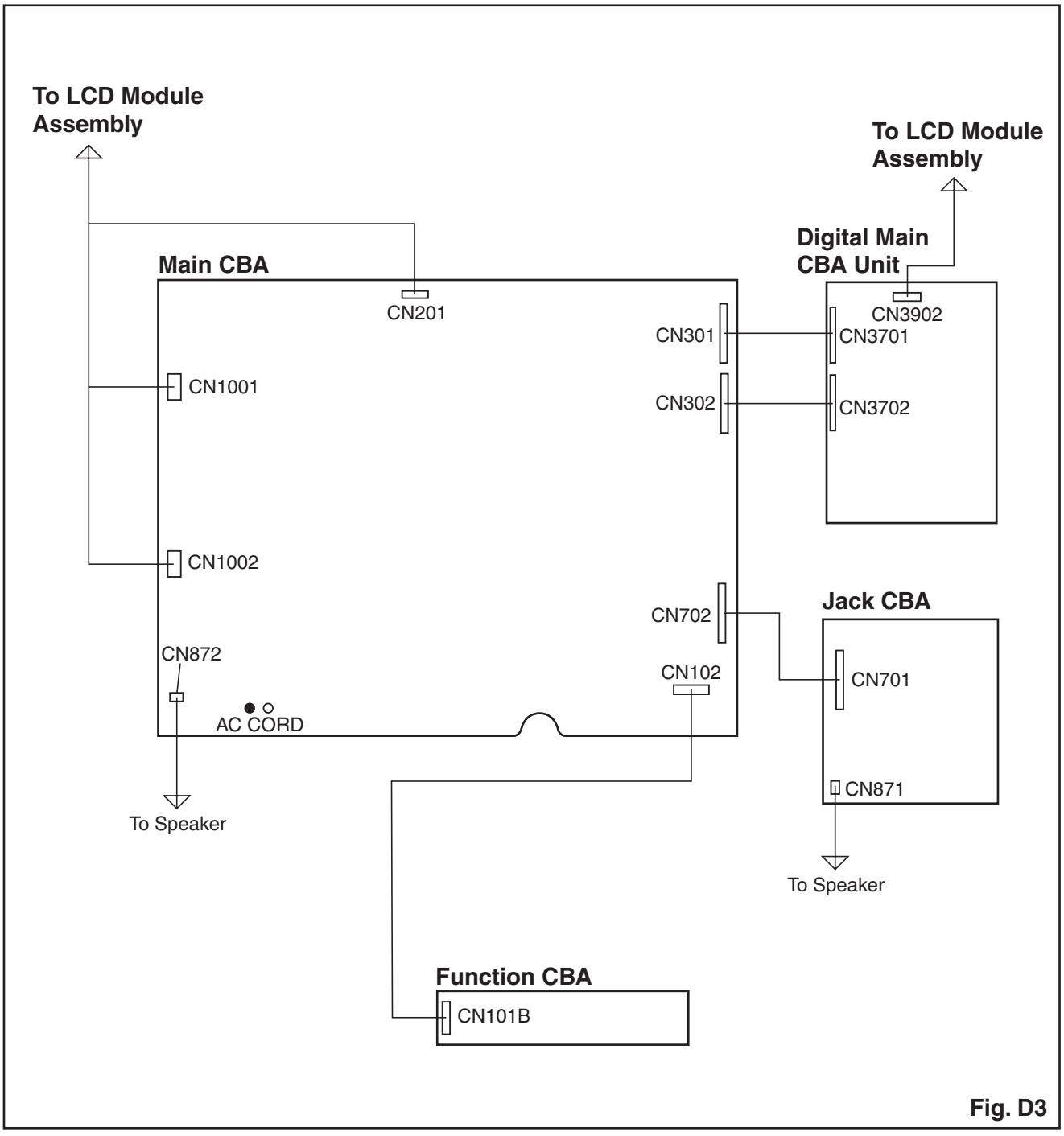


Fig. D3

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: “CBA” is abbreviation for “Circuit Board Assembly.”

Note: Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed.
Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required

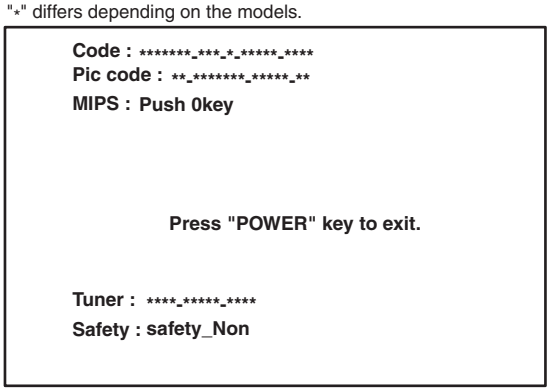
1. NTSC Pattern Generator (Color Bar W/White Window, Red Color, Dot Pattern, Gray Scale, Monoscope, Multi-Burst)
2. Remote control unit
3. Color Analyzer

How to set up the service mode:

Service mode:

1. Turn the power on.
2. Press [MENU] button to display Setup menu.
3. Select “Features”.
4. Select “Current Software Info”.
5. Press [0], [4], [2], [5], [7], [4] and [Info] buttons on the remote control unit in this order. The following screen appears.

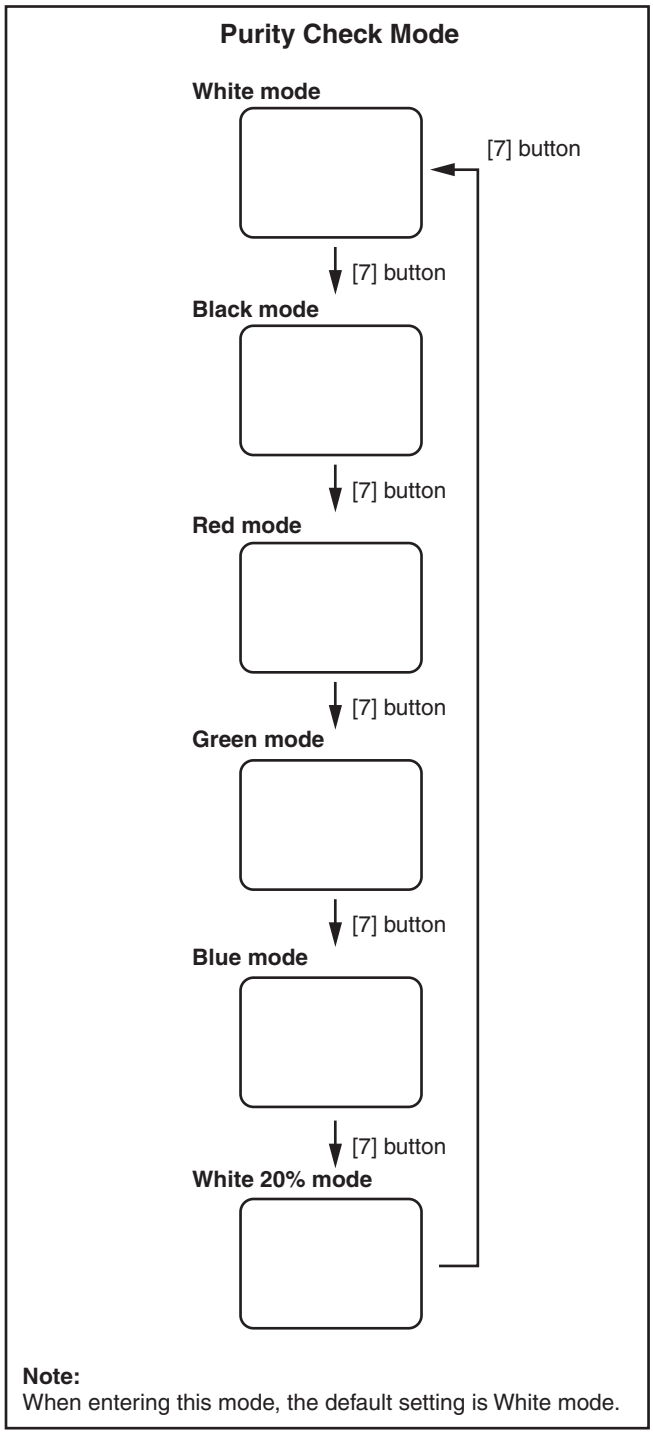
"⋆" differs depending on the models.



1. Purity Check Mode

This mode cycles through full-screen displays of red, green, blue, and white to check for non-active pixels.

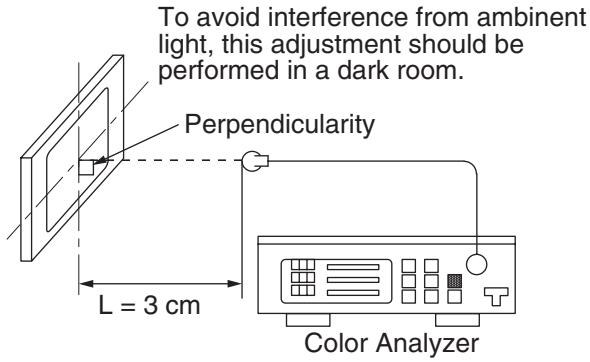
1. Enter the Service mode.
2. Each time pressing [7] button on the remote control unit, the display changes as follows.



3. To cancel or to exit from the Purity Check Mode, press [PREV CH] button.

2. VCOM Adjustment

Test Point	Adj. Point
Screen	[CHANNEL UP/DOWN] buttons
M. EQ.	**Spec.**
Color analyzer	See below
Figure	


To avoid interference from ambinent light, this adjustment should be performed in a dark room.
Perpendicularity
L = 3 cm
Color Analyzer

1. Operate the unit for more than 60 minutes.
2. Set the color analyzer and bring the optical receptor to the center on the LCD-Panel surface after zero point calibration as shown above.
   Note: The optical receptor must be set perpendicularly to the LCD Panel surface.
3. Enter the Service mode.
4. Press [3] button on the remote control unit.
5. Press [CHANNEL UP/DOWN] buttons on the remote control unit so that the color analyzer value becomes minimum.
6. To cancel or to exit from the VCOM Adjustment, press [PREV CH] button.

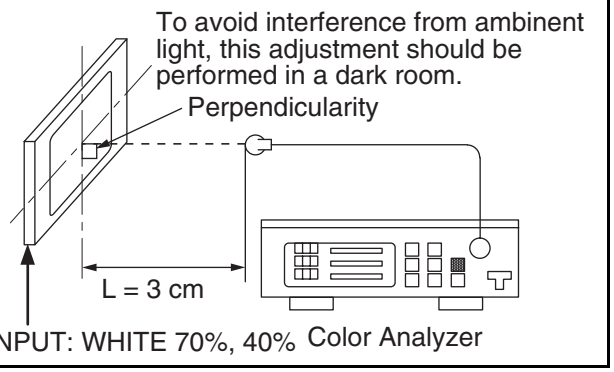
The White Balance Adjustment should be performed when replacing the LCD Panel or Digital Main CBA.

3. White Balance Adjustment

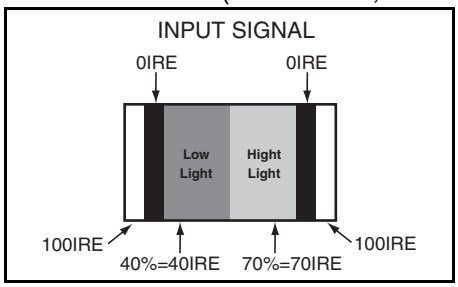
Purpose: To mix red, green and blue beams correctly for pure white.

Symptom of Misadjustment: White becomes bluish or reddish.

Test Point	Adj. Point	Mode	Input
Screen	[VOLUME DOWN] button	**[VIDEO1]** C/D	White Raster (APL 70%) or (APL 40%)
M. EQ.		**Spec.**	
Pattern Generator, Color analyzer		x= 0.272 ± 0.005 y= 0.278 ± 0.005	
Figure			


To avoid interference from ambinent light, this adjustment should be performed in a dark room.
Perpendicularity
L = 3 cm
INPUT: WHITE 70%, 40%
Color Analyzer

1. Operate the unit for more than 60 minutes.
2. Input the White Raster(70%=70IRE, 40%=40IRE).



3. Set the color analyzer to the CHROMA mode and bring the optical receptor to the center on the LCD-Panel surface after zero point calibration as shown above.
   Note: The optical receptor must be set perpendicularly to the LCD Panel surface.
4. Enter the Service mode. Press [VOLUME DOWN] button on the remote control unit and select “C/D” mode.
5. **[CUTOFF]**
   Press [1] button to select “COR” for Red Cutoff adjustment. Press [3] button to select “COB” for Blue Cutoff adjustment.
   [DRIVE]
   Press [4] button to select “DR” for Red Drive adjustment. Press [6] button to select “DB” for Blue Drive adjustment.
6. In each color mode, press [CHANNEL UP/DOWN] buttons to adjust the values of color.
7. Adjust Cutoff and Drive so that the color temperature becomes 12000°K (x= 0.272 / y= 0.278 ±0.005).
8. To cancel or to exit from the White Balance Adjustment, press [PREV CH] button.

HOW TO INITIALIZE THE LCD TV

The purpose of initialization is to place the set in a new out of box condition. The customer will be prompted to select a language and program channels after the set has been initialized.
To put the program back at the factory-default, initialize the LCD TV using the following procedure.

1. Turn the power on.
2. Enter the service mode.
   - To cancel the service mode, press [POWER] button on the remote control unit.
3. Press [INFO] button on the remote control unit to initialize the LCD television.
4. "INITIALIZED" will appear in the upper right of the screen. "INITIALIZED" color will change to green from red when initializing is completed.

FIRMWARE RENEWAL MODE

Equipment Required

a. USB storage device
b. Remote Control Unit

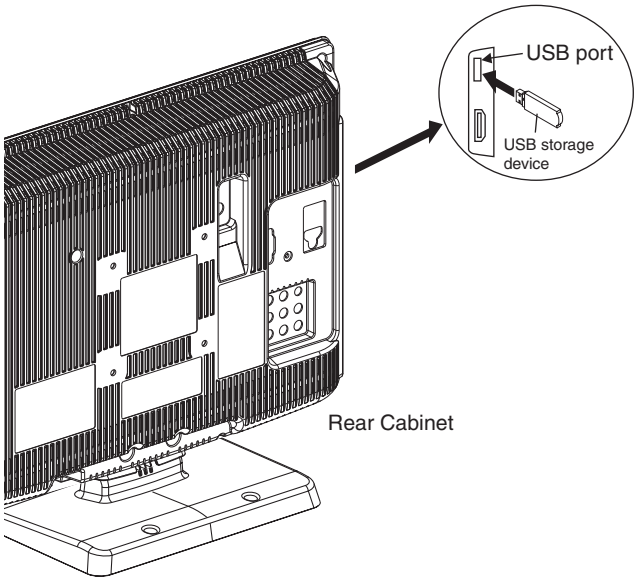
Firmware Update Procedure

Note: There are two states (the User Upgrade and the Factory Upgrade) in firmware update.

User Upgrade	Upgrade the firmware only. The setting values are not initialized.
Factory upgrade	Upgrade the firmware and initialize the setting values.

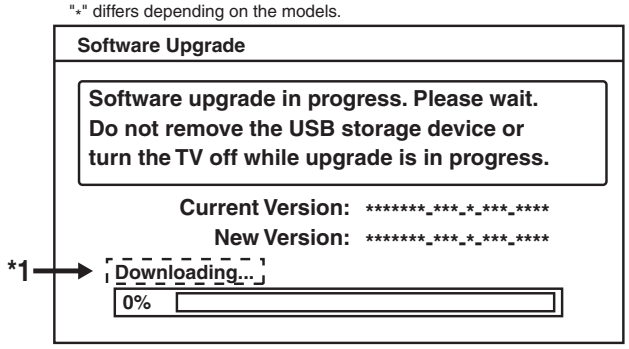
The identification of User Upgrade and Factory Upgrade are done by the filename.

1. Turn the power off and unplug the AC Cord.
2. Insert the USB storage device to the USB port as shown below.



3. Plug the AC cord in the wall outlet and turn the power on.
4. The update will start and the following will appear on the screen.

"⋆" differs depending on the models.

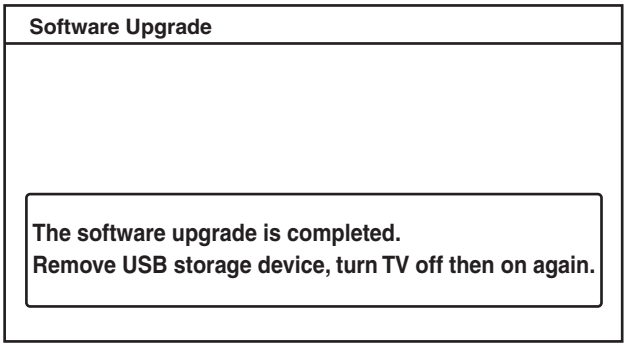


Note: If the above screen isn't displayed, repeat from step 1.

The appearance shown in *1 is described as follows.

Appearance	State
Downloading...	Downloading the firmware from the USB storage device.
Writing...	Writing the downloaded firmware in flash memory.
Checking...	Checking the new firmware.

5. When the firmware update is completed, the following will appear on the screen.



Remove the USB storage device from the USB port.
Turn the power off and turn the power on again.

Note:

When the Factory Upgrade is used, after restarting TV, shift to initial screen menu in service mode. "INITIALIZED" will appear on the upper right of the screen. "INITIALIZED" color will change to green from red when initializing is completed.

TROUBLESHOOTING

[Power Supply Section]

FLOW CHART NO.1

The power cannot be turned on.

↓

Is the fuse (F601) normal? — No → See FLOW CHART No.2 <The fuse blows out.>

↓ Yes

Is normal state restored when once unplugged power cord is plugged again several seconds? — No → Check if there is any leak or short-circuiting on the primary circuit component, and service it if defective. (D601, D602, D603, D604, Q601, Q602, T601)

↓ Yes

Is the INV+31V line voltage normal? — No → (same box)

↓ Yes

Check each rectifying circuit of the secondary circuit and service it if defective.

FLOW CHART NO.2

The fuse blows out.

↓

Check the presence that the primary component is leaking or shorted and service it if defective.

Check the presence that the rectifying diode or circuit is shorted in each rectifying circuit of secondary side, and service it if defective.

↓

After servicing, replace the fuse.

FLOW CHART NO.3

When the output voltage fluctuates.

↓

Does the photocoupler circuit on the secondary side operate normally? — No → Check IC601, D633, Q631 and their periphery circuit, and service it if defective.

↓ Yes

Check IC601, D608, D610 and their periphery, circuit and service it if defective.

FLOW CHART NO.4

When buzz sound can be heard in the vicinity of power circuit.

↓

Check if there is any short-circuit on the rectifying diode and the circuit in each rectifying circuit of the secondary side, and service it if defective. (IC631, Q201, Q205, Q206, Q634, Q635, Q636, Q637, Q640, Q641, Q643, D631, D632, D636, D638, D639, D641, D643)

FLOW CHART NO.5

INV+31V is not output.

↓

Is approximately +31V voltage supplied to the cathode of D632? — No → Check C632, D632, D633 and their periphery circuit, and service it if defective.

↓ Yes

Check if there is any leak or short-circuit on the loaded circuit, and service it if defective.

FLOW CHART NO.6

PANEL+24.5V is not output.

↓

Is approximately +30V voltage supplied to the collector of Q205?

No → See FLOW CHART No.5

↓ Yes

Check Q202, Q203, D203, P-ON-H1 line and their periphery circuit, and service it if defective.

FLOW CHART NO.7

PANEL+13V is not output.

↓

Is approximately +15V voltage supplied to the collector of Q201?

No → Check C631, D631, D668 and their periphery circuit, and service it if defective.

↓ Yes

Is approximately +13V voltage supplied to the base of Q201?

No → Check Q202, Q203, D201, D202, D210 and their periphery circuit, and service it if defective.

↓ Yes

Replace Q201.

FLOW CHART NO.8

P-ON+7V is not output.

↓

Is approximately +7V voltage supplied to the cathode of D641?

No → Check C641, D641 and their periphery circuit, and service it if defective.

↓ Yes

Check if there is any leak or short-circuit on the loaded circuit, and service it if defective.

FLOW CHART NO.9

P-ON+5V is not output. (PANEL+13V is outputted normally.)

↓

Is approximately +6.8V voltage supplied to the collector of Q635?

No → See FLOW CHART No.8

↓ Yes

Is approximately +6V voltage supplied to the base of Q635 and the base of Q636?

No → Check D659 and their periphery circuit, and service it if defective.

↓ Yes

Replace Q635 and Q636.

FLOW CHART NO.10

TUNER+5V is not output. (PANEL+13V is outputted normally.)

Is approximately +6.7V voltage supplied to the collector of Q637?

No → See FLOW CHART No.8

Yes

Is approximately +6V voltage supplied to the base of Q637?

No → Check D659 and their periphery circuit, and service it if defective.

Yes

Replace Q637.

FLOW CHART NO.11

P-ON+3V is not output.

Is approximately +3V voltage supplied to the cathode of D638?

No → Check C638, D638 and their periphery circuit, and service it if defective.

Yes

Check if there is any leak or short-circuit on the loaded circuit, and service it if defective.

FLOW CHART NO.12

P-ON+3.3V(PANEL+3.3V) is not output.

Is approximately +5V voltage supplied to the cathode of D639?

No → Check C639, D639 and their periphery circuit, and service it if defective.

Yes

Is the "H" signal (approximately +3.5V) inputted to the base of Q640?

No → Check Q638, Q639, P-ON-H2 line and their periphery circuit, and service it if defective.

Yes

Replace Q640.

FLOW CHART NO.13

P-ON+9V is not output. (PANEL+13V is outputted normally.)

Is approximately +13V voltage supplied to the collector of Q641?

No → Check C643, D643 and their periphery circuit, and service it if defective.

Yes

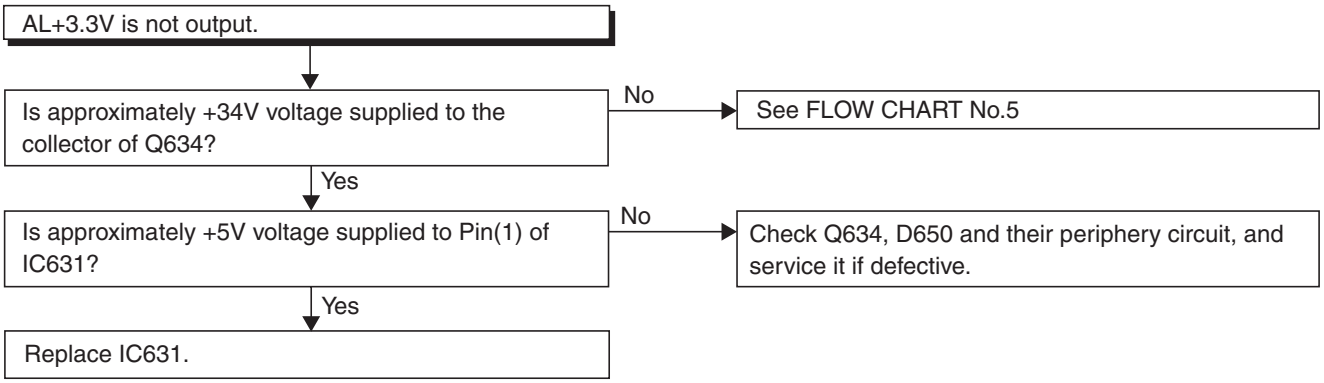
Is approximately +10V voltage supplied to the base of Q641?

No → Check D666 and their periphery circuit, and service it if defective.

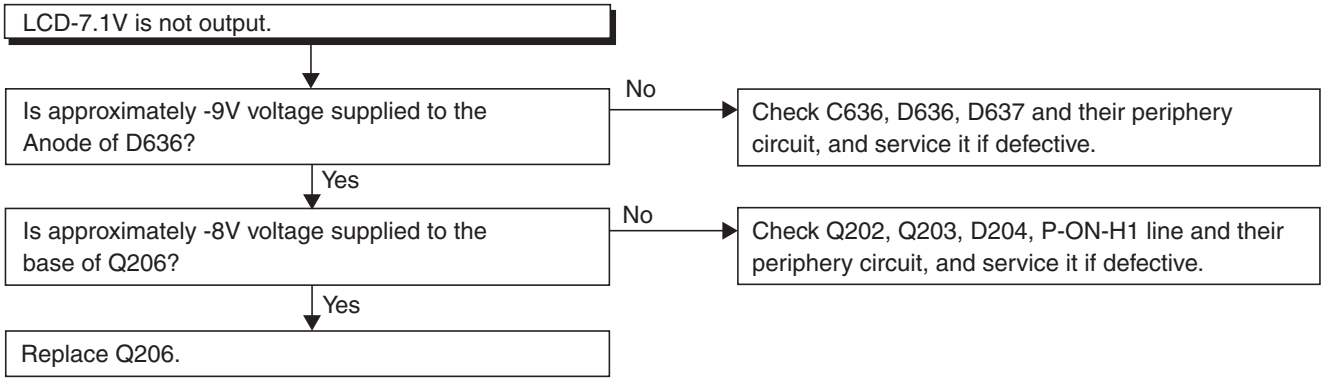
Yes

Replace Q641.

FLOW CHART NO.14


AL+3.3V is not output.
Is approximately +34V voltage supplied to the collector of Q634?
No
See FLOW CHART No.5
Yes
Is approximately +5V voltage supplied to Pin(1) of IC631?
No
Check Q634, D650 and their periphery circuit, and service it if defective.
Yes
Replace IC631.

FLOW CHART NO.15


LCD-7.1V is not output.
Is approximately -9V voltage supplied to the Anode of D636?
No
Check C636, D636, D637 and their periphery circuit, and service it if defective.
Yes
Is approximately -8V voltage supplied to the base of Q206?
No
Check Q202, Q203, D204, P-ON-H1 line and their periphery circuit, and service it if defective.
Yes
Replace Q206.

[Video Signal Section]

FLOW CHART NO.1

The key operation is not functioning.

↓

Are the contact point and installation state of the key switches (SW104~SW109) normal?

No → Re-install the switches (SW104~SW109) correctly or replace the poor switch.

↓ Yes

When pressing each switches (SW104~SW109) do the voltage of Pin(29) of CN302 increase?

No → Check the switches (SW104~SW109) and their periphery, and service it if defective.

↓ Yes

Replace Digital Main CBA Unit.

FLOW CHART NO.2

No operation is possible from the remote control unit.

↓

Operation is possible from the unit.

↓

Is 3.3V voltage supplied to Pin(2) terminal of the remote control receiver (RS101)?

No → Check AL+3.3V line and service it if defective.

↓ Yes

Is the "L" pulse sent out Pin(1) terminal of remote control receiver (RS101) when the infrared remote control is activated?

No → Replace the remote control receiver(RS101) or the remote control unit.

↓ Yes

Is the "L" pulse supplied to Pin(25) of CN301?

No → Check the line between Pin(1) terminal of remote control receiver(RS101) and Pin(25) of CN301, and service it if defective.

↓ Yes

Replace Digital Main CBA Unit.

FLOW CHART NO.3

Picture does not appear normally.(Video input)

↓

Are the video signal inputted to Pin(4) of CN302?

No → Check the line between Pin(4) of CN302 and JK752, and service it if defective.

↓ Yes

Replace Digital Main CBA Unit or LCD Module Assembly.

FLOW CHART NO.4

Picture does not appear normally.(Tuner input)

↓

Are the DIF signal inputted to Pin(26,28) of CN302?

No → Check the line between Pin(26, 28) of CN302 and Pin(10, 11) of TU302, and service it if defective.

Yes ↓

Replace Digital Main CBA Unit or LCD Module Assembly.

FLOW CHART NO.5

Picture does not appear normally.(S-Video input)

↓

Are the video signal outputted to Pin(6, 8) of CN302?

Pin(6): S-VIDEO-C
Pin(8): S-VIDEO-Y

No → Check the line between Pin(6, 8) of CN302 and JK751, and service it if defective.

Yes ↓

Replace Digital Main CBA Unit or LCD Module Assembly.

FLOW CHART NO.6

Picture does not appear normally.(Y/Pb/Pr input)

↓

Are the video signal inputted to Pin(15, 17, 19) of CN302?

Pin(15): VIDEO-Y
Pin(17): VIDEO-Pb
Pin(19): VIDEO-Pr

No → Check the line between Pin(15, 17, 19) of CN302 and input terminals(JK731, JK732, JK733), and service it if defective.

Yes ↓

Replace Digital Main CBA Unit or LCD Module Assembly.

[Audio Signal Section]

FLOW CHART NO.1

Audio is not outputted normally.(Audio input)

Are the audio(L/R) signals inputted to Pin(2, 15) of IC771?
- No → Check the line between Pin(2, 15) of IC771 and input terminal(JK753, JK754), and service it if defective.
- Yes ↓

Are the audio(L/R) signals inputted to Pin(6, 8) of CN301?
- No → Replace Digital Main CBA Unit.
- Yes ↓

Are the audio(L/R) signals inputted to Pin(3, 5) of IC803?
- No → Check the line between Pin(6, 8) of CN301 and Pin(3, 5) of IC803, and service it if defective.
- Yes ↓

Are the audio(L/R) signals outputted to Pin(1, 7) of IC803?
- No → Replace IC803
- Yes ↓

Are the audio(L/R) signals inputted to Pin(1, 9) of IC801?
- No → Check the line between Pin(1, 7) of IC803 and Pin(1, 9) of IC801, and service it if defective.
- Yes ↓

Are the audio(L/R) signals outputted to Pin(4, 6) of IC801?
- No → Check IC801 and their periphery circuit, and service it if defective.
- Yes ↓

Check SP861,SP862 and their periphery circuit, and service it if defective.

FLOW CHART NO.2

Audio is not outputted normally.(Component Audio input)

Are the audio(L/R) signals inputted to Pin(4, 11) of IC771?
- No → Check the line between Pin(4, 11) of IC771 and input terminal(JK741, JK742), and service it if defective.
- Yes ↓

Are the audio(L/R) signals inputted to Pin(6, 8) of CN301?
- No → Replace Digital Main CBA Unit.
- Yes ↓

Are the audio(L/R) signals inputted to Pin(3, 5) of IC803?
- No → Check the line between Pin(6, 8) of CN301 and Pin(3, 5) of IC803, and service it if defective.
- Yes ↓

Are the audio(L/R) signals outputted to Pin(1, 7) of IC803?
- No → Replace IC803
- Yes ↓

Are the audio(L/R) signals inputted to Pin(1, 9) of IC801?
- No → Check the line between Pin(1, 7) of IC803 and Pin(1, 9) of IC801, and service it if defective.
- Yes ↓

Are the audio(L/R) signals outputted to Pin(4, 6) of IC801?
- No → Check IC801 and their periphery circuit, and service it if defective.
- Yes ↓

Check SP861,SP862 and their periphery circuit, and service it if defective.

FLOW CHART NO.3

Audio is not outputted normally.(Tuner input)

Are the DIF signals outputted to Pin(26, 28) of CN302?
- No → Check TU302 and their periphery circuit, and service it if defective.
- Yes ↓

Are the audio(L/R) signals inputted to Pin(6, 8) of CN301?
- No → Replace Digital Main CBA Unit.
- Yes ↓

Are the audio(L/R) signals inputted to Pin(3, 5) of IC803?
- No → Check the line between Pin(6, 8) of CN301 and Pin(3, 5) of IC803, and service it if defective.
- Yes ↓

Are the audio(L/R) signals outputted to Pin(1, 7) of IC803?
- No → Replace IC803
- Yes ↓

Are the audio(L/R) signals inputted to Pin(1, 9) of IC801?
- No → Check the line between Pin(1, 7) of IC803 and Pin(1, 9) of IC801, and service it if defective.
- Yes ↓

Are the audio(L/R) signals outputted to Pin(4, 6) of IC801?
- No → Check IC801 and their periphery circuit, and service it if defective.
- Yes ↓

Check SP861,SP862 and their periphery circuit, and service it if defective.

FLOW CHART NO.4

Audio is not outputted normally.(HDMI Audio input)

Are the audio(L/R) signals inputted to Pin(5, 14) of IC771?
- No → Check the line between Pin(5, 14) of IC771 and input terminal(JK721, JK722), and service it if defective.
- Yes ↓

Are the audio(L/R) signals inputted to Pin(6, 8) of CN301?
- No → Replace Digital Main CBA Unit.
- Yes ↓

Are the audio(L/R) signals inputted to Pin(3, 5) of IC803?
- No → Check the line between Pin(6, 8) of CN301 and Pin(3, 5) of IC803, and service it if defective.
- Yes ↓

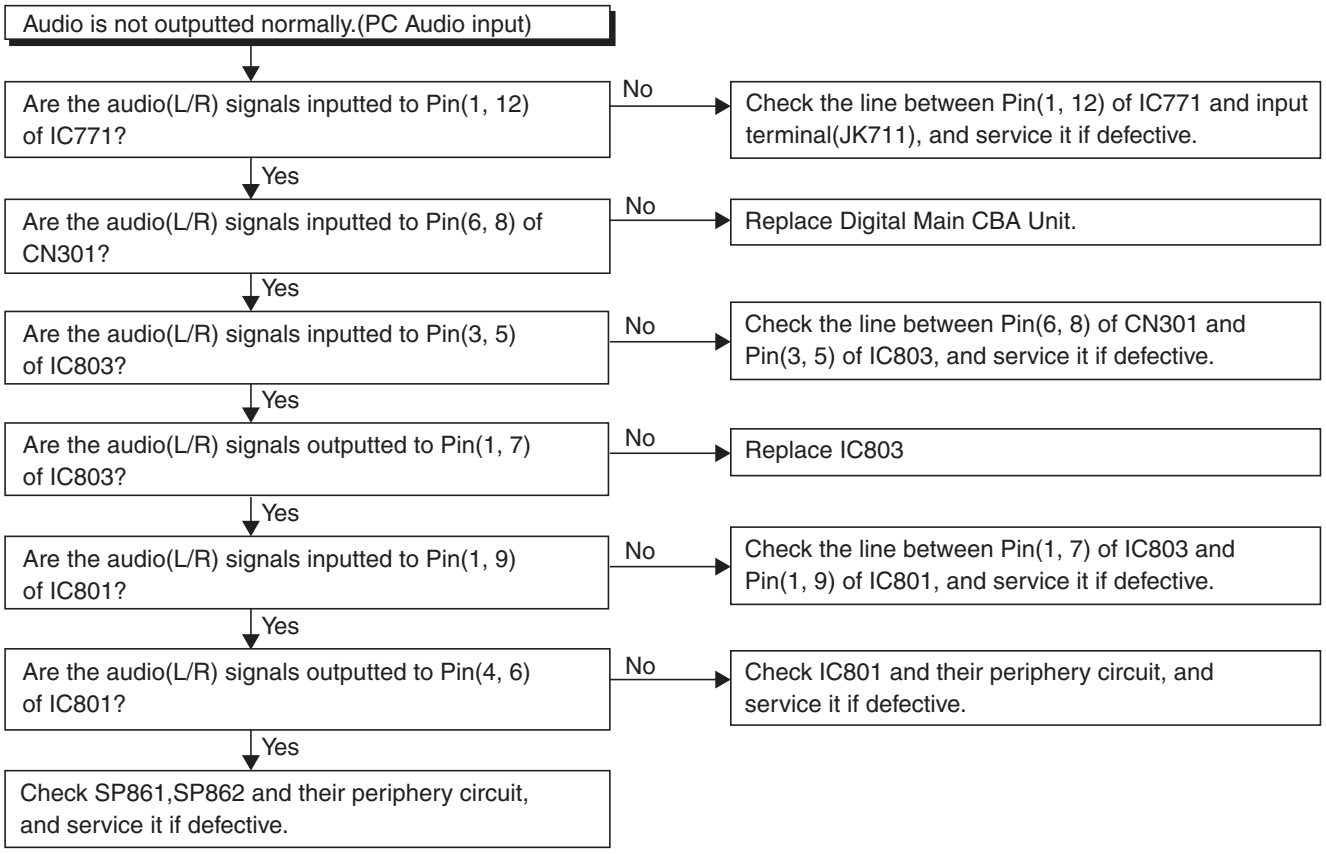
Are the audio(L/R) signals outputted to Pin(1, 7) of IC803?
- No → Replace IC803
- Yes ↓

Are the audio(L/R) signals inputted to Pin(1, 9) of IC801?
- No → Check the line between Pin(1, 7) of IC803 and Pin(1, 9) of IC801, and service it if defective.
- Yes ↓

Are the audio(L/R) signals outputted to Pin(4, 6) of IC801?
- No → Check IC801 and their periphery circuit, and service it if defective.
- Yes ↓

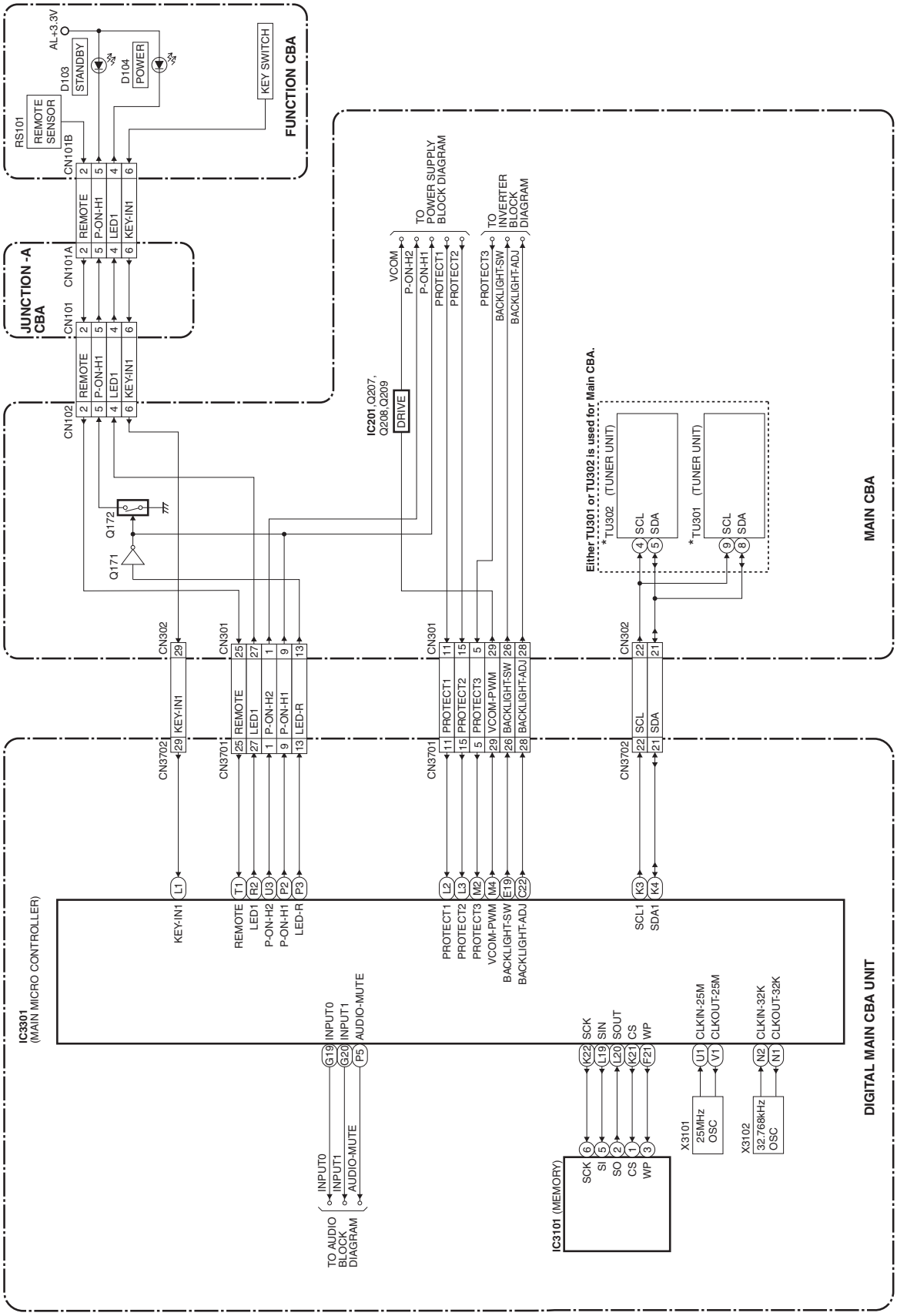
Check SP861,SP862 and their periphery circuit, and service it if defective.

FLOW CHART NO.5

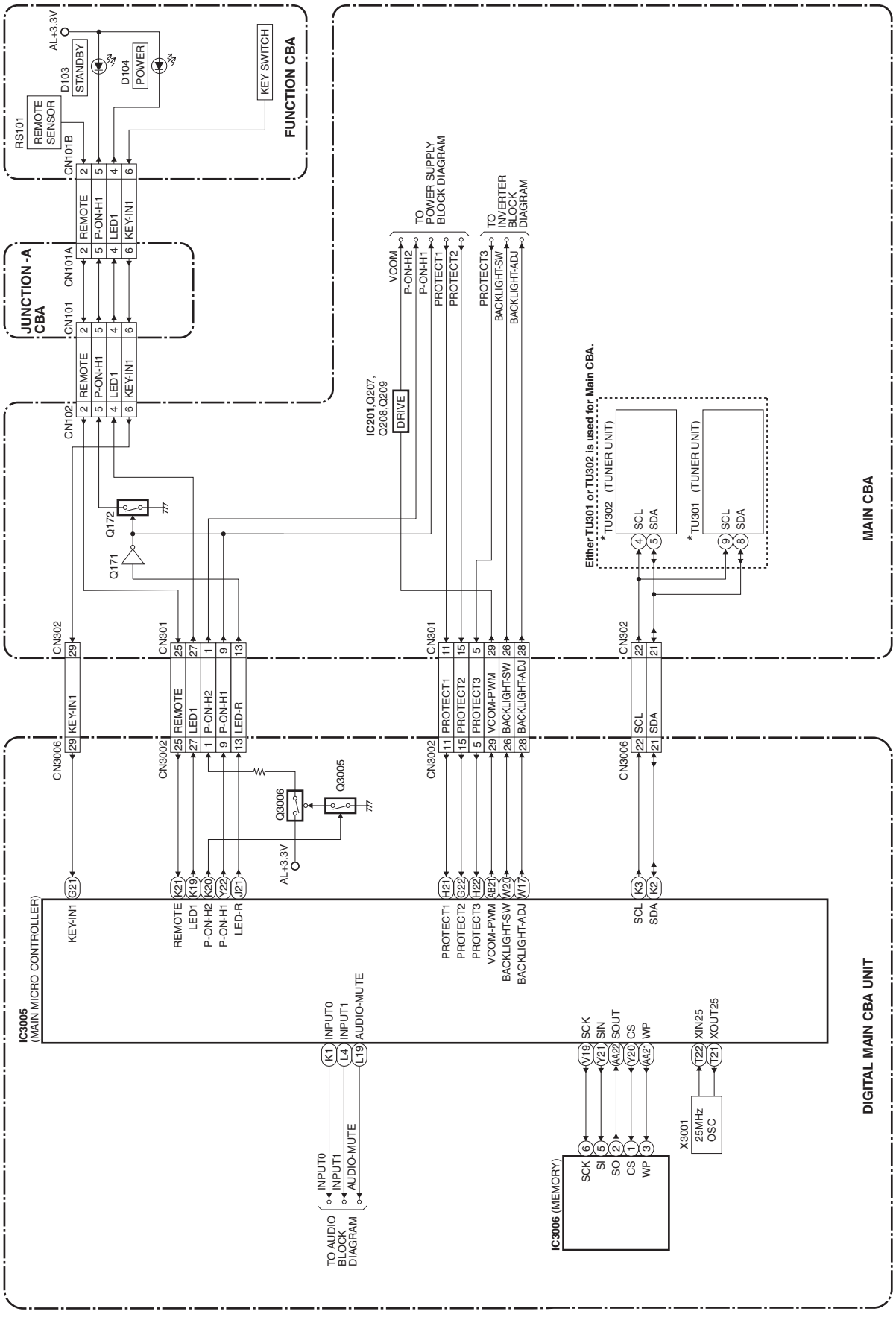

Audio is not outputted normally.(PC Audio input)
Are the audio(L/R) signals inputted to Pin(1, 12) of IC771?
No
Check the line between Pin(1, 12) of IC771 and input terminal(JK711), and service it if defective.
Yes
Are the audio(L/R) signals inputted to Pin(6, 8) of CN301?
No
Replace Digital Main CBA Unit.
Yes
Are the audio(L/R) signals inputted to Pin(3, 5) of IC803?
No
Check the line between Pin(6, 8) of CN301 and Pin(3, 5) of IC803, and service it if defective.
Yes
Are the audio(L/R) signals outputted to Pin(1, 7) of IC803?
No
Replace IC803
Yes
Are the audio(L/R) signals inputted to Pin(1, 9) of IC801?
No
Check the line between Pin(1, 7) of IC803 and Pin(1, 9) of IC801, and service it if defective.
Yes
Are the audio(L/R) signals outputted to Pin(4, 6) of IC801?
No
Check IC801 and their periphery circuit, and service it if defective.
Yes
Check SP861,SP862 and their periphery circuit, and service it if defective.

BLOCK DIAGRAMS

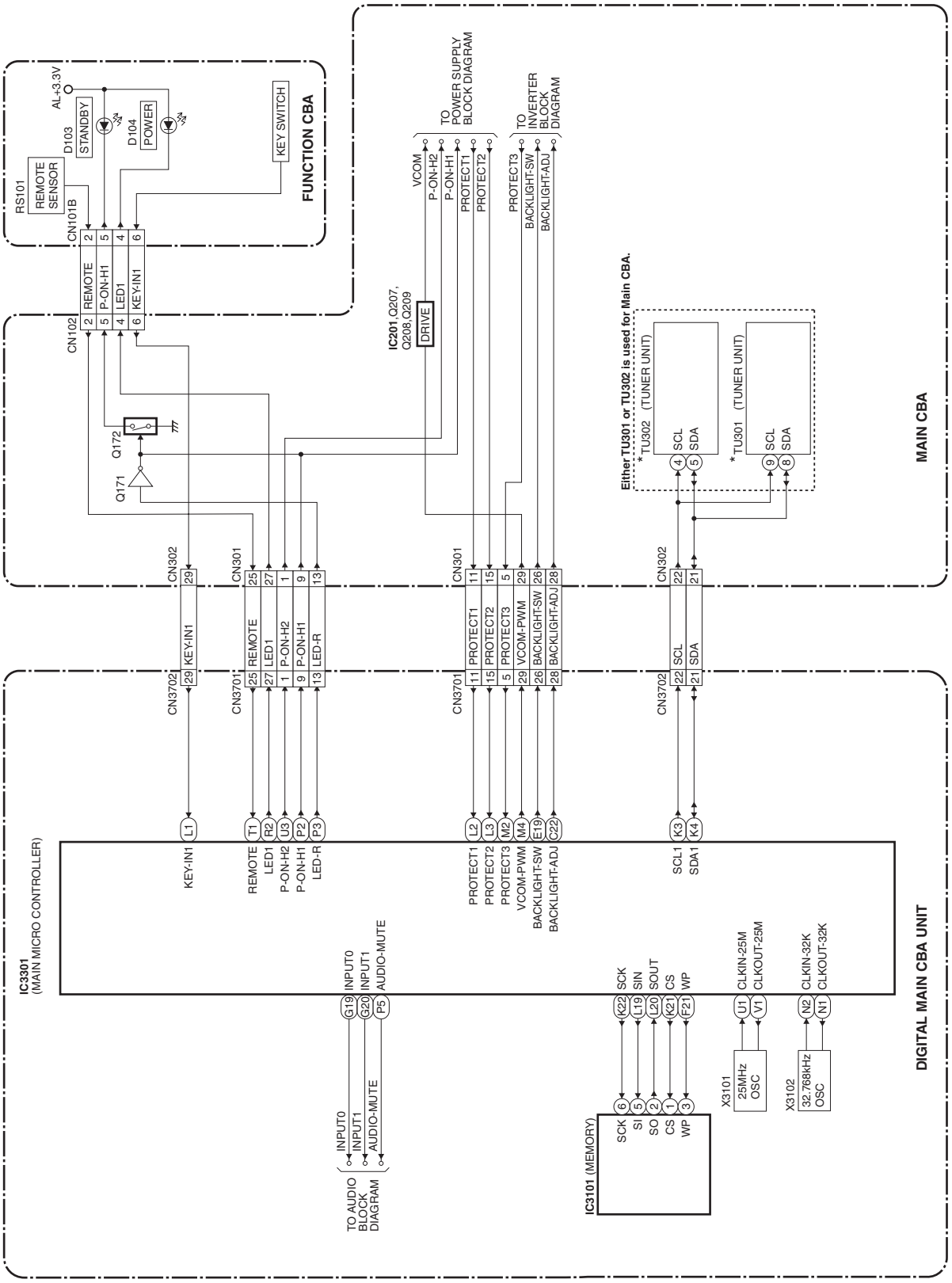
System Control Block Diagram
[LC190EM1(Serial No.:DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1(Serial No.:DS1A,DS2A,TH1A), LC190SS1]



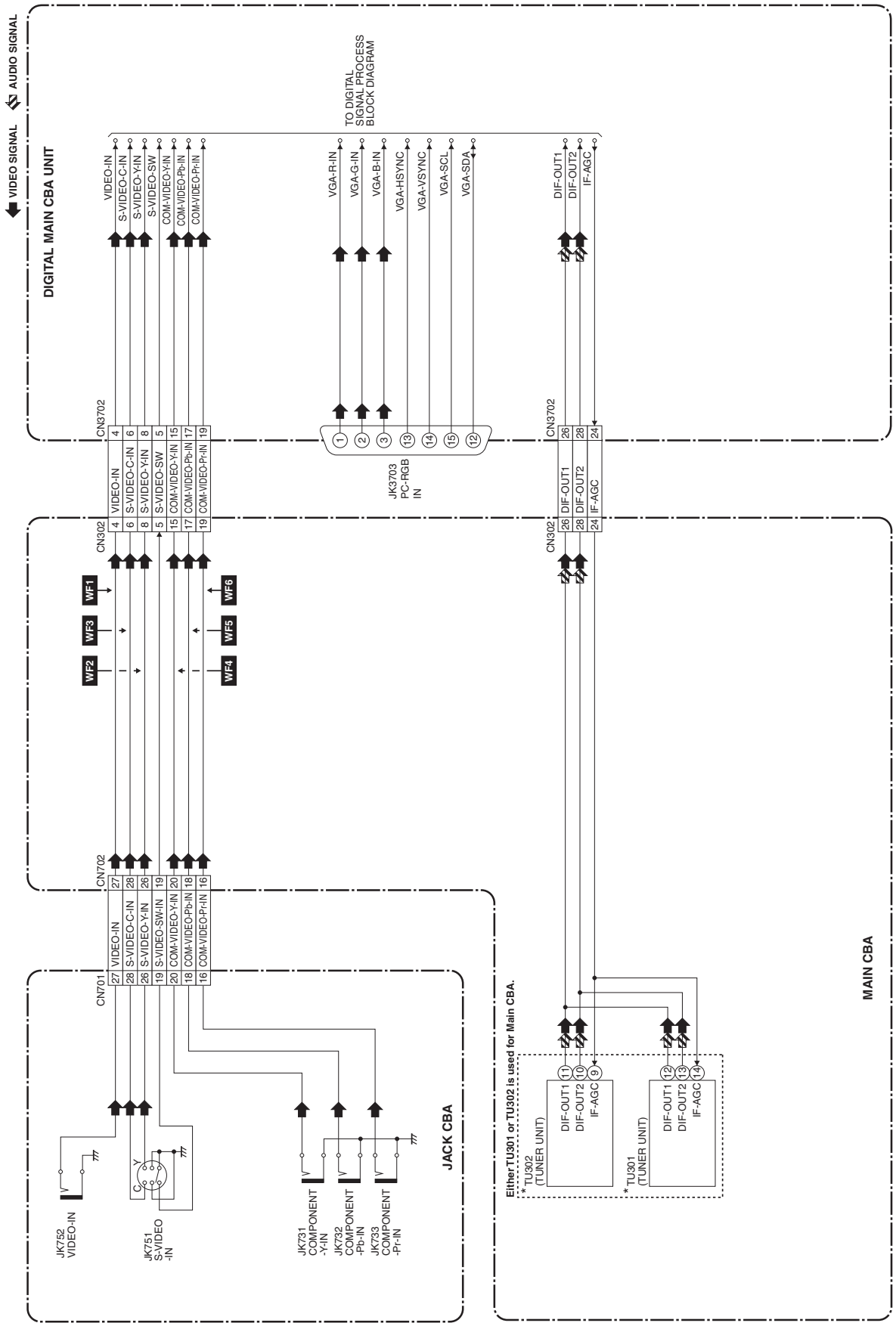
System Control Block Diagram [LC190EM1(Serial No.:DS4A)]



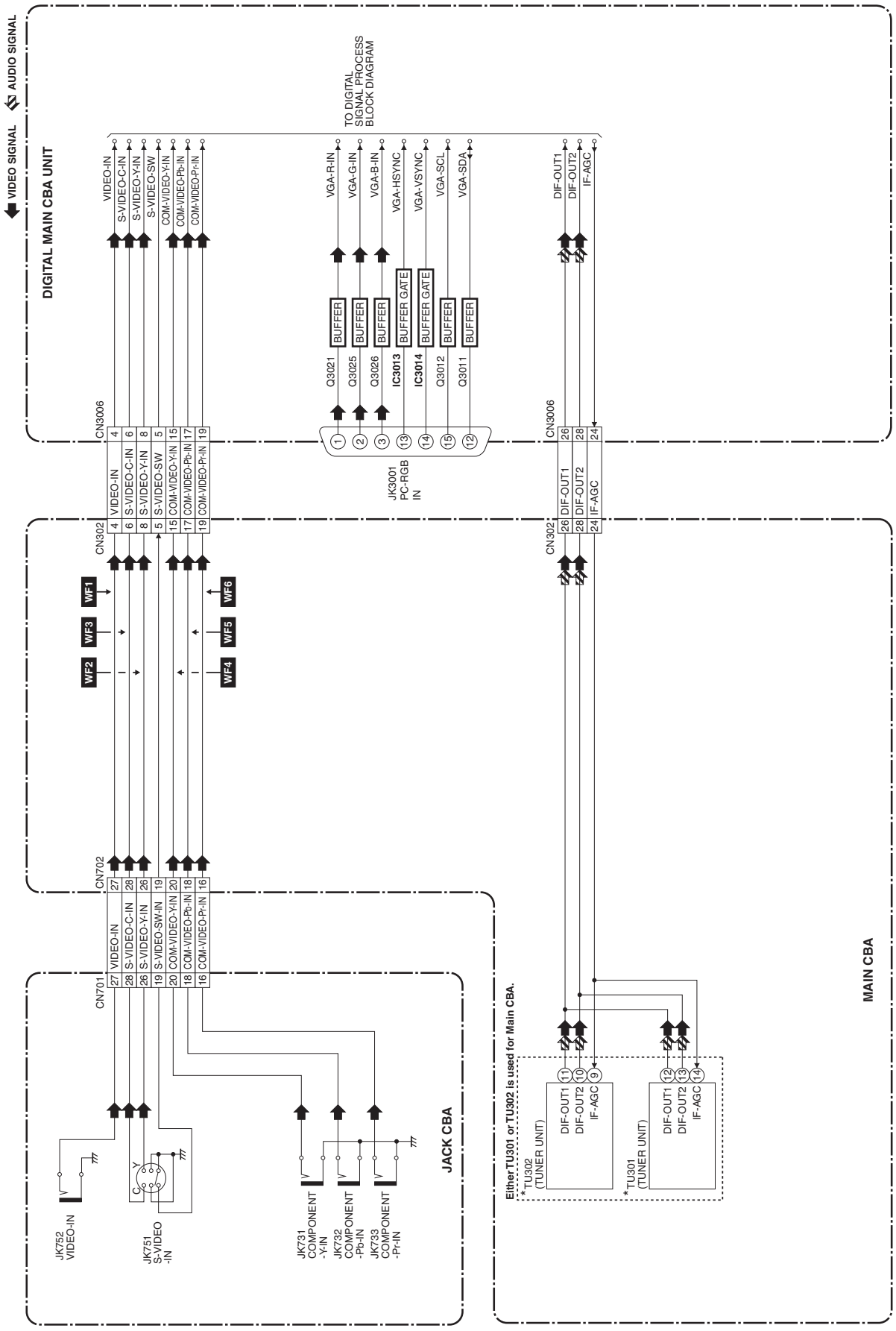
System Control Block Diagram [LC190SL1(Serial No.:TH2A)]



Video Block Diagram
[LC190EM1(Serial No.:DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1, LC190SS1]

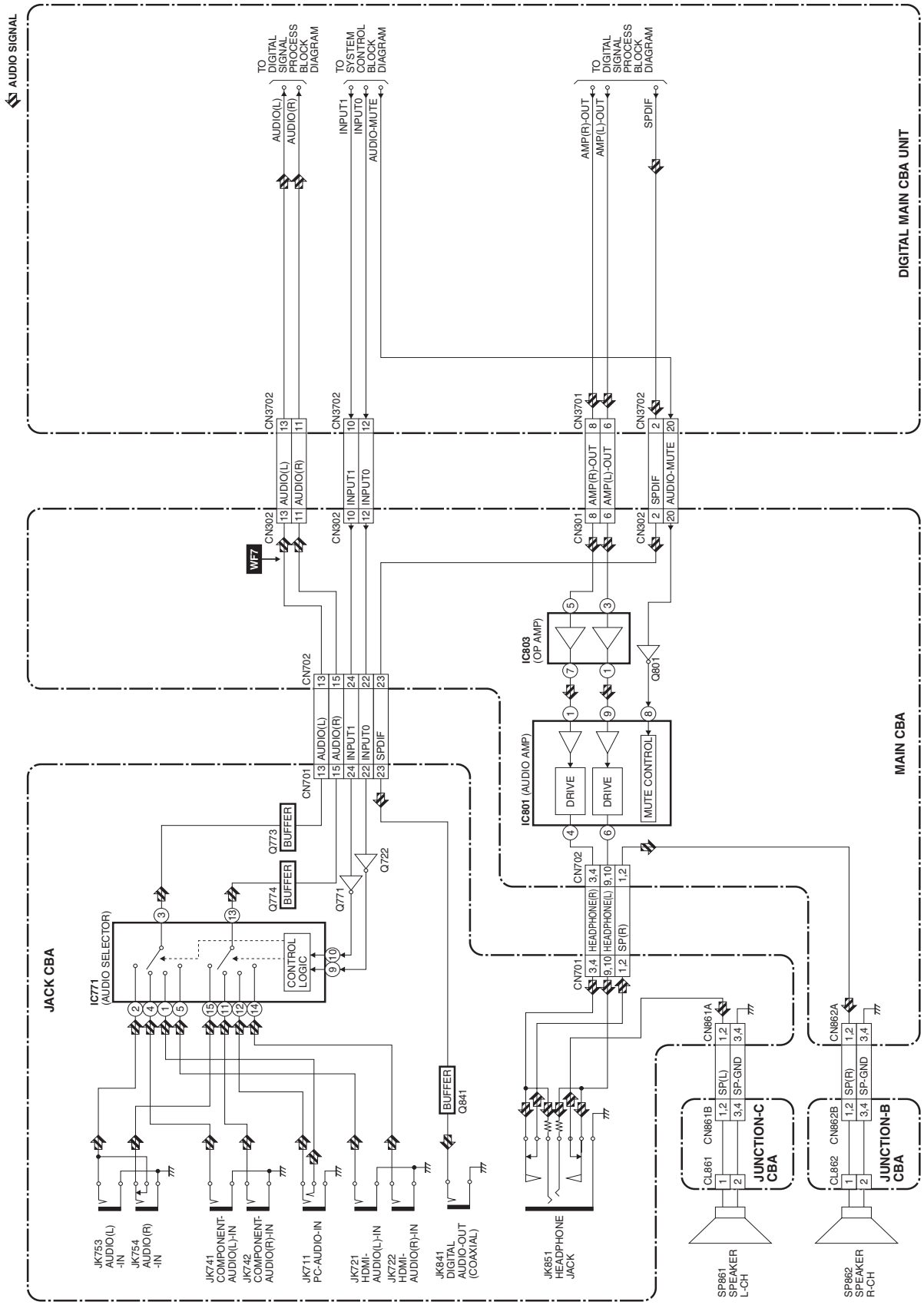


Video Block Diagram [LC190EM1(Serial No.:DS4A)]

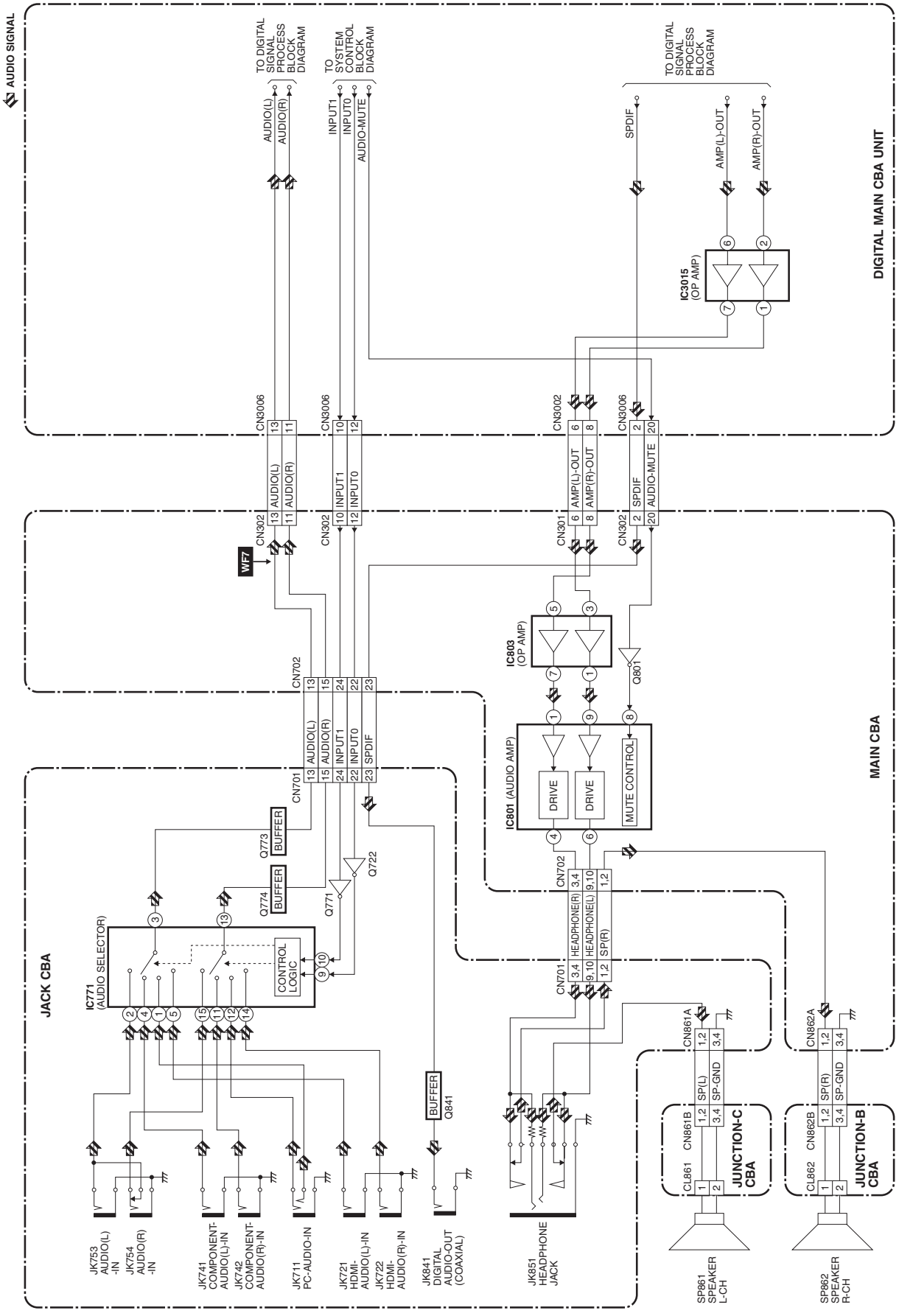


Audio Block Diagram

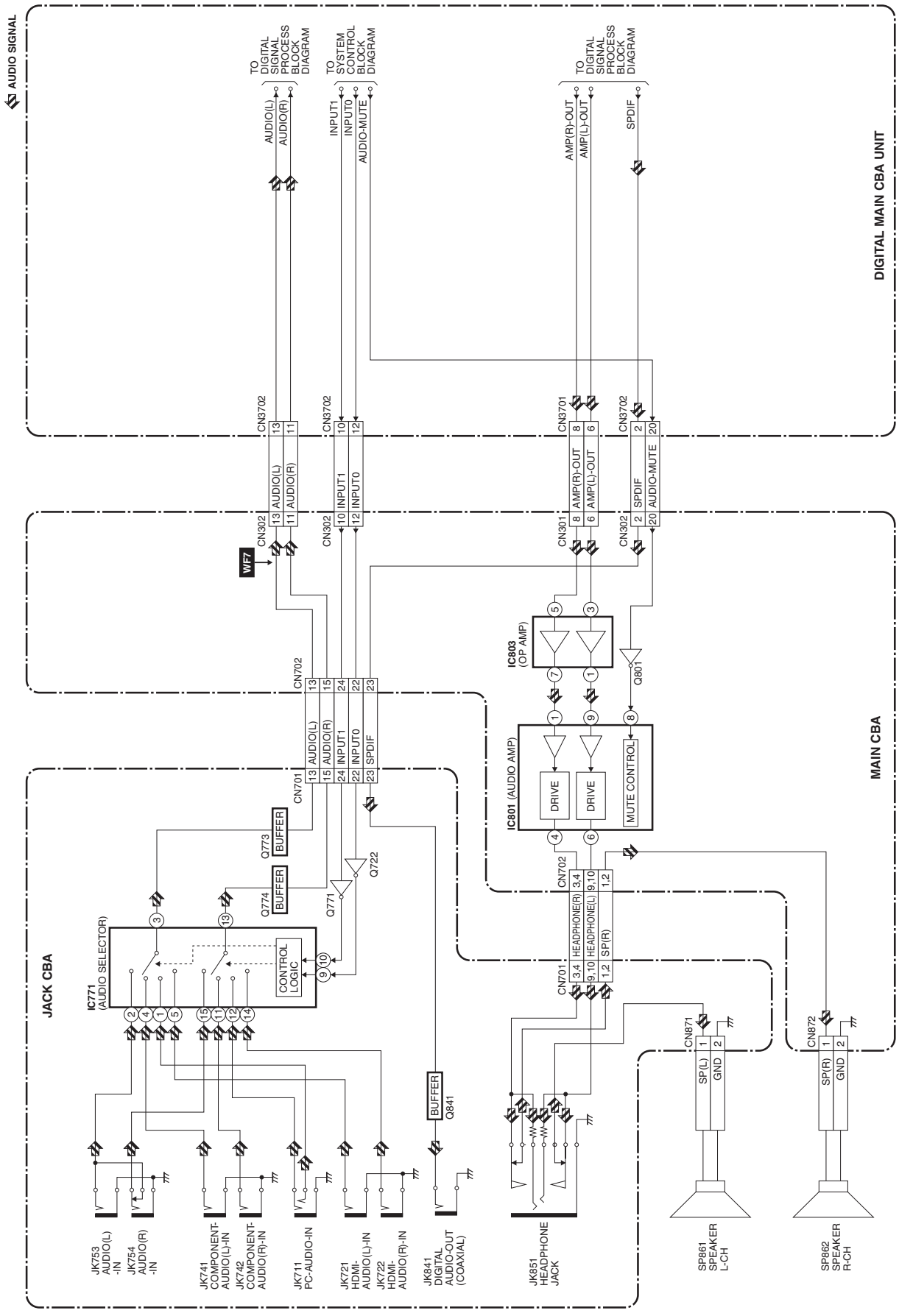
[LC190EM1(Serial No.:DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1(Serial No.:DS1A,DS2A,TH1A), LC190SS1]



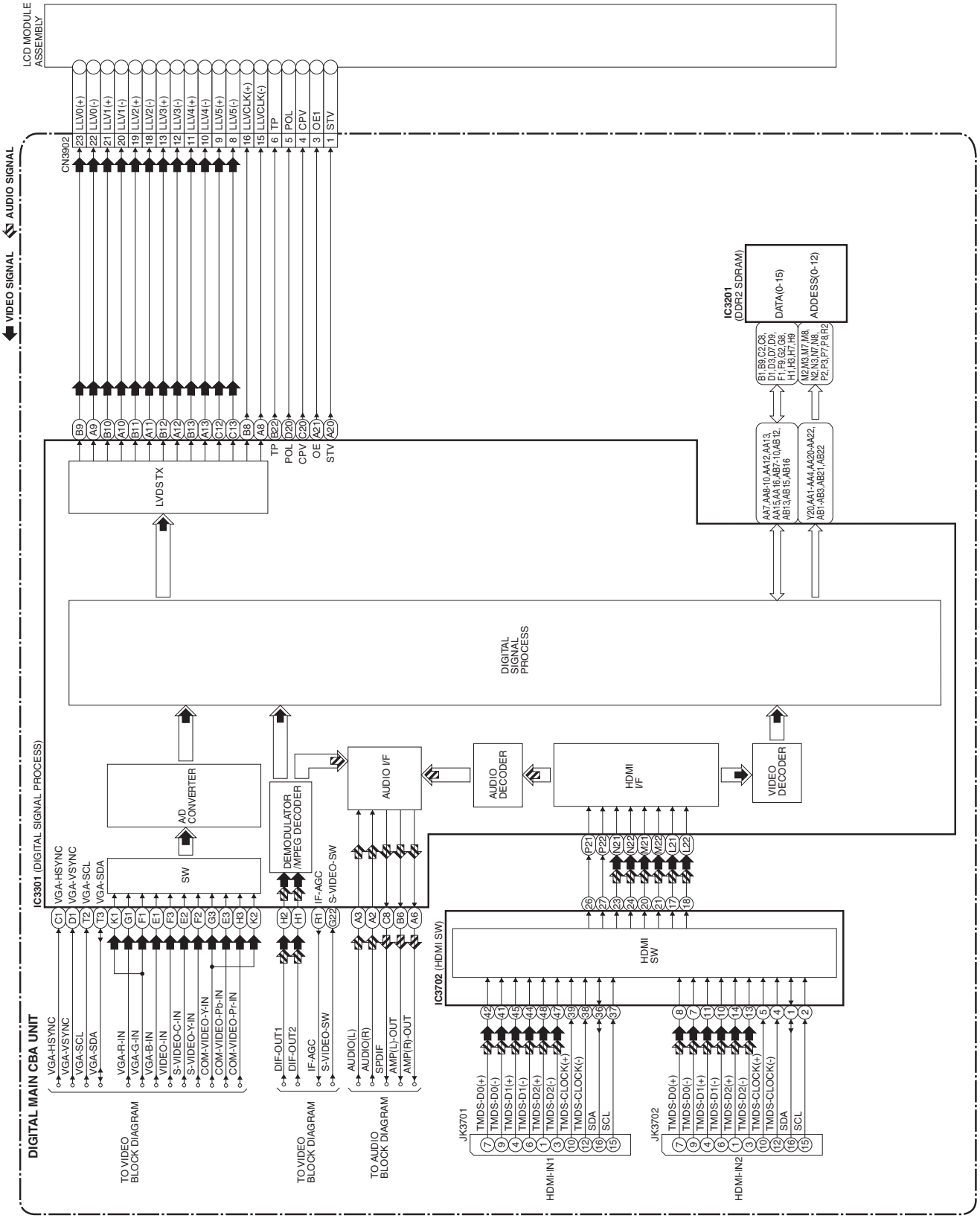
Audio Block Diagram [LC190EM1(Serial No.:DS4A)]



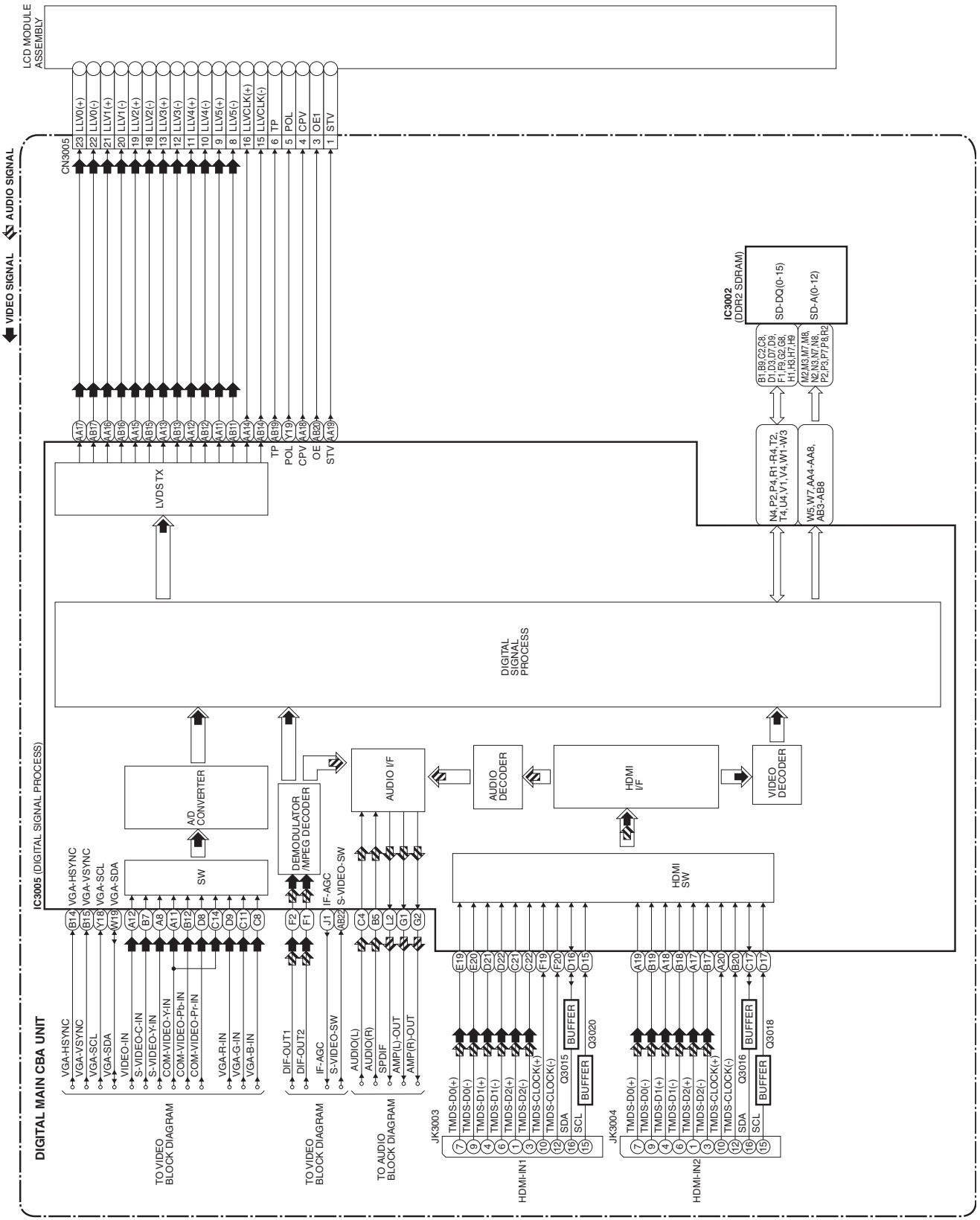
Audio Block Diagram [LC190SL1(Serial No.:TH2A)]



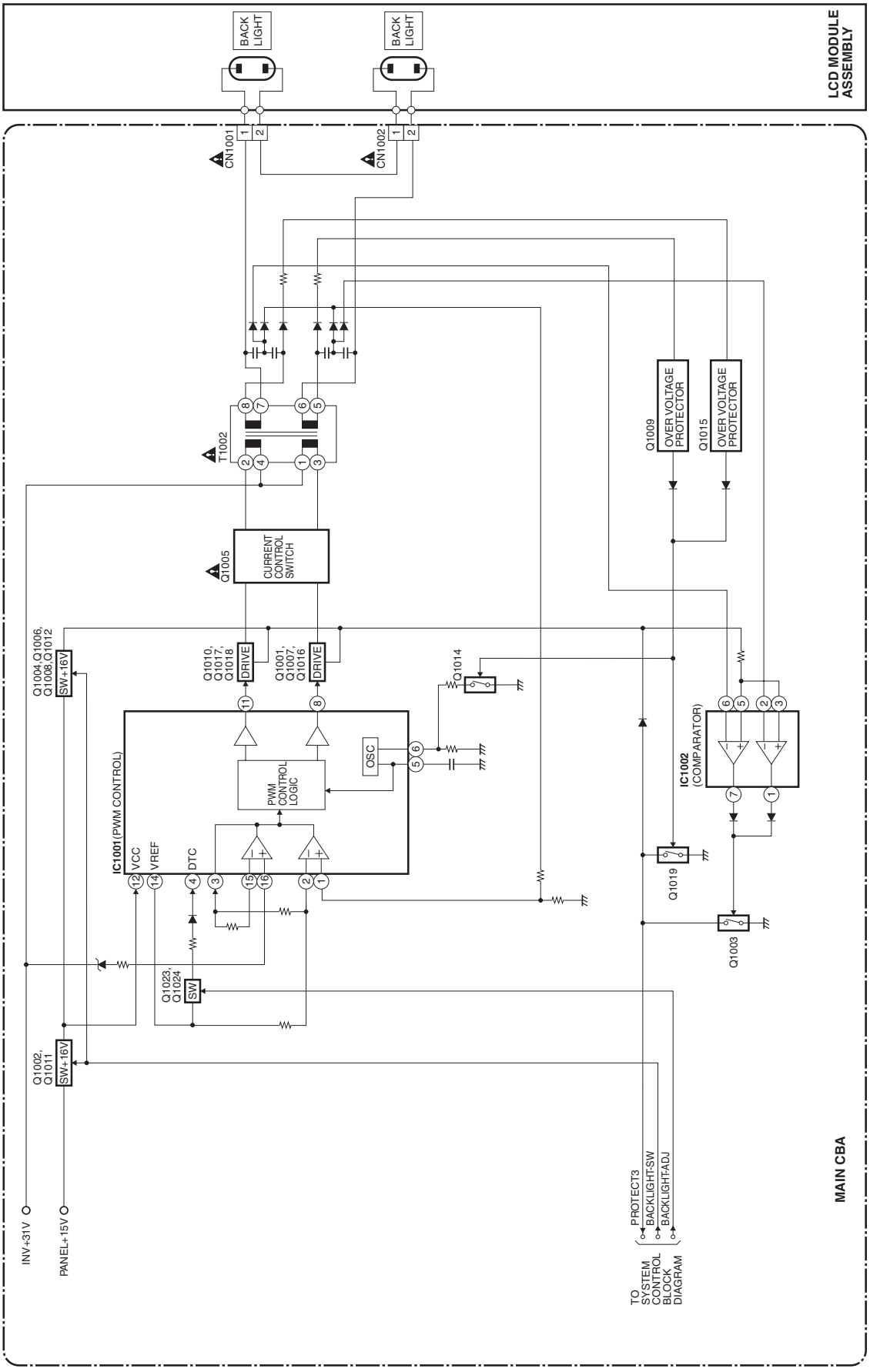
Digital Signal Process Block Diagram
[LC190EM1(Serial No.:DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1, LC190SS1]



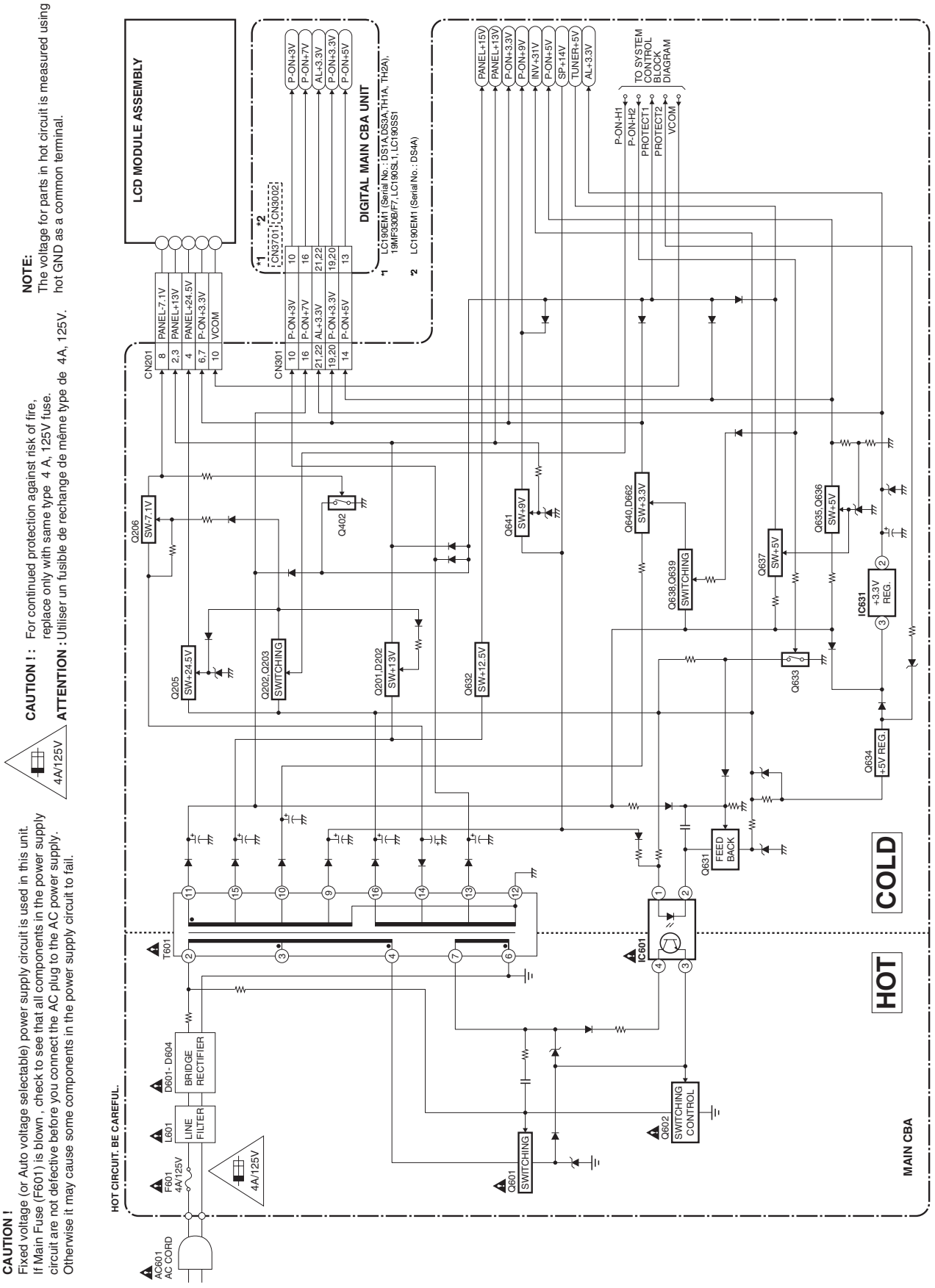
Digital Signal Process Block Diagram [LC190EM1(Serial No.:DS4A)]



Inverter Block Diagram



Power Supply Block Diagram



SCHEMATIC DIAGRAMS / CBA AND TEST POINTS

Standard Notes

WARNING

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark "⚠" in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Notes:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ($K = 10^3$, $M = 10^6$).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in μF ($P = 10^{-6}$ μF).
5. All voltages are DC voltages unless otherwise specified.
6. This schematic diagrams are masterized version that should cover the entire FL10.0 chassis models. Thus some parts in detail illustrated on this schematic diagrams may vary depend on the model within the FL10.0 chassis.
   Please refer to the parts lists for each models.
7. The Circuit Board layout illustrated on this service manual is the latest version for this chassis at the moment of making this service manual.
   Depend on the mass production date of each model, the actual layout of each Board may differ slightly from this version.

LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. CAUTION:

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE_A,_V FUSE.

ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE_A,_V.

2. CAUTION:

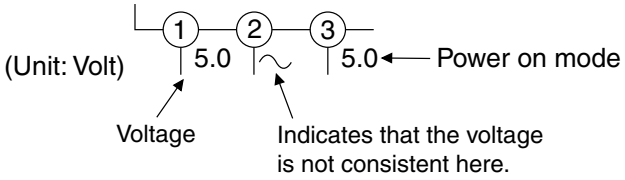
Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. Note:

1. Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
2. To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Voltage indications on the schematics are as shown below:

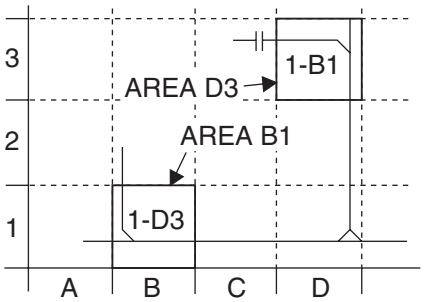
Plug the TV power cord into a standard AC outlet.:



5. How to read converged lines

1-D3
- Distinction Area
- Line Number (1 to 3 digits)

Examples:
1. "1-D3" means that line number "1" goes to the line number "1" of the area "D3".
2. "1-B1" means that line number "1" goes to the line number "1" of the area "B1".



6. Test Point Information

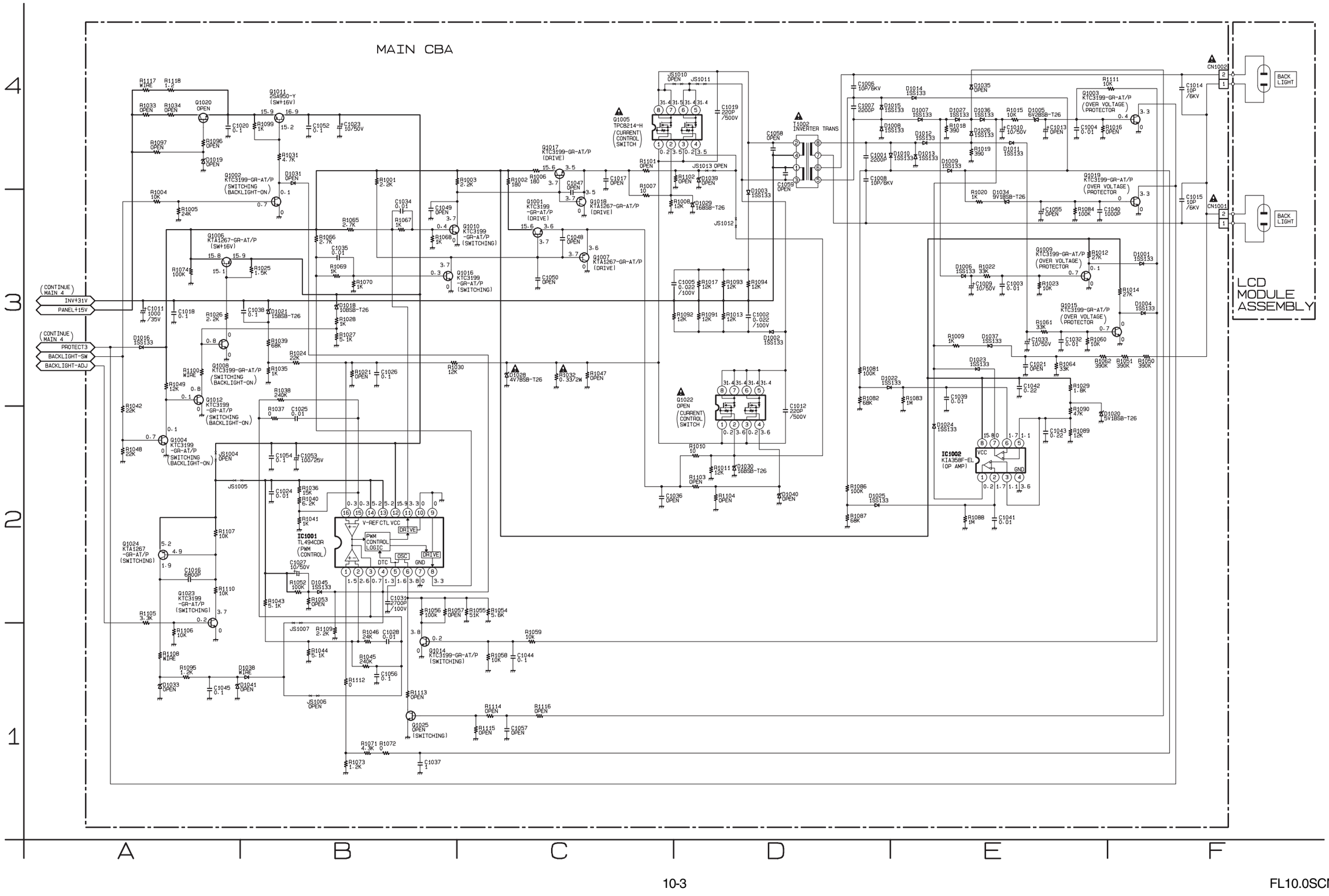
: Indicates a test point with a jumper wire across a hole in the PCB.

: Used to indicate a test point with a component lead on foil side.

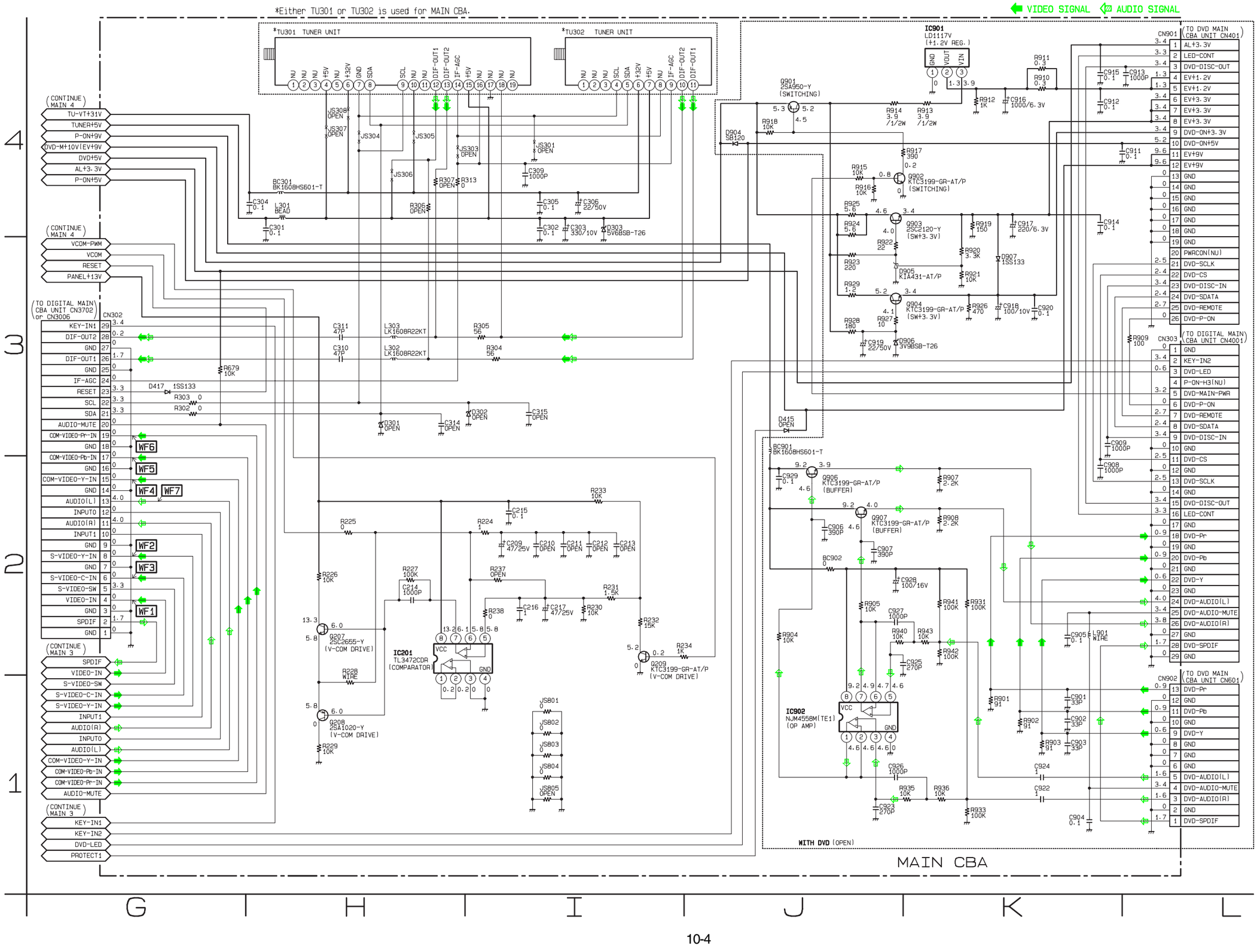
: Used to indicate a test point with no test pin.

: Used to indicate a test point with a test pin.

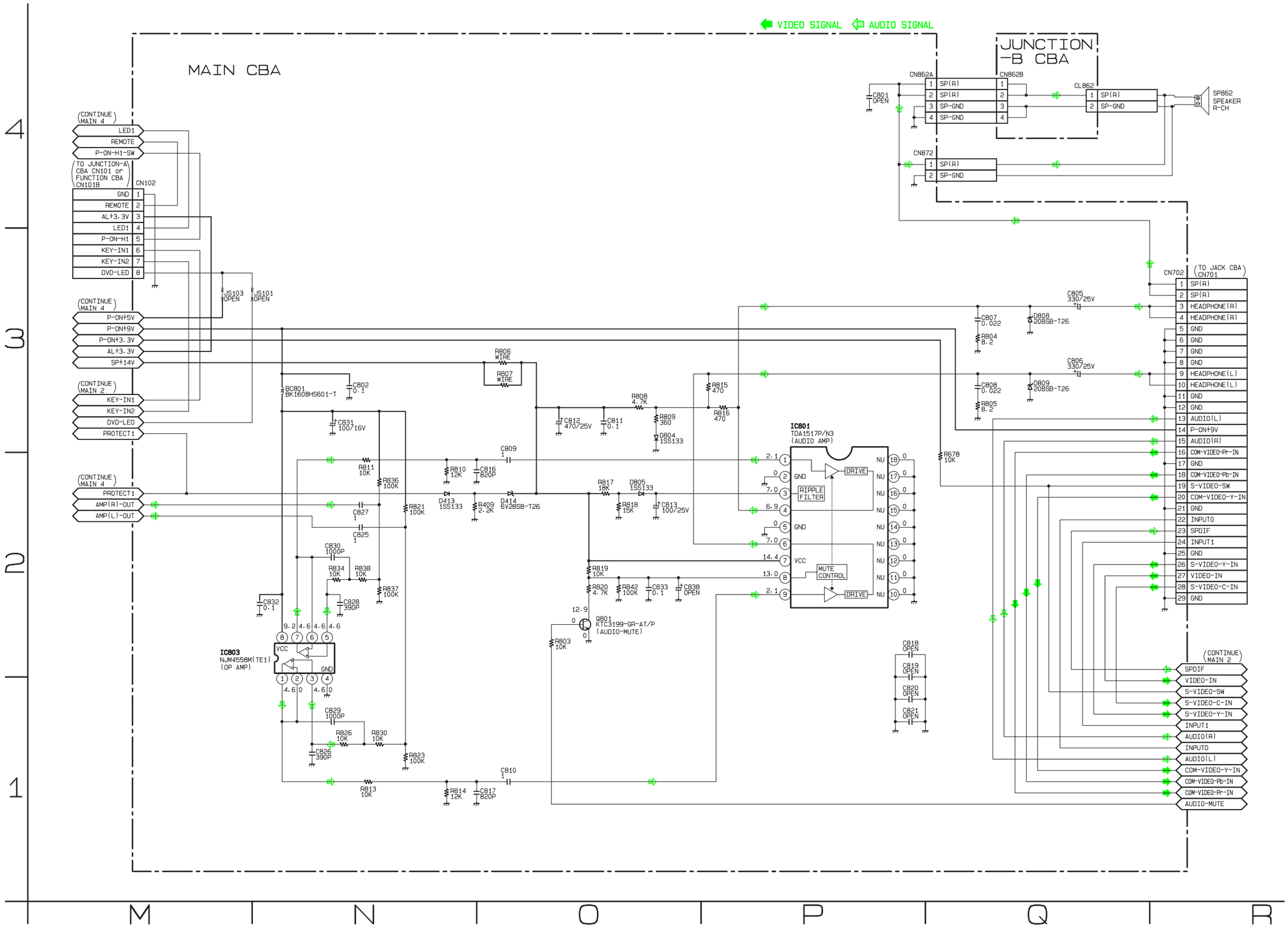
Main 1 Schematic Diagram



Main 2 Schematic Diagram



Main 3 & Junction-B Schematic Diagram



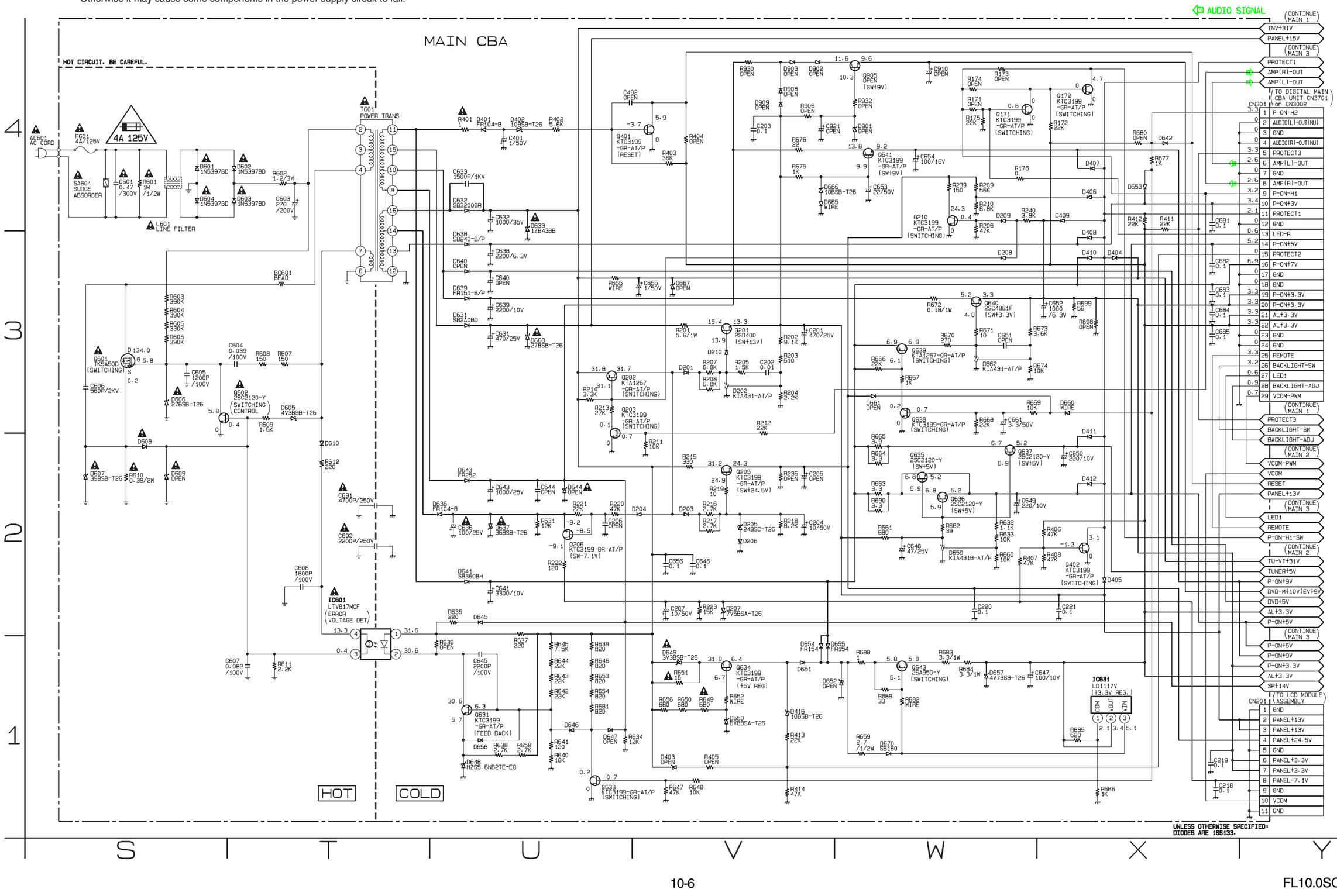
Main 4 Schematic Diagram

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

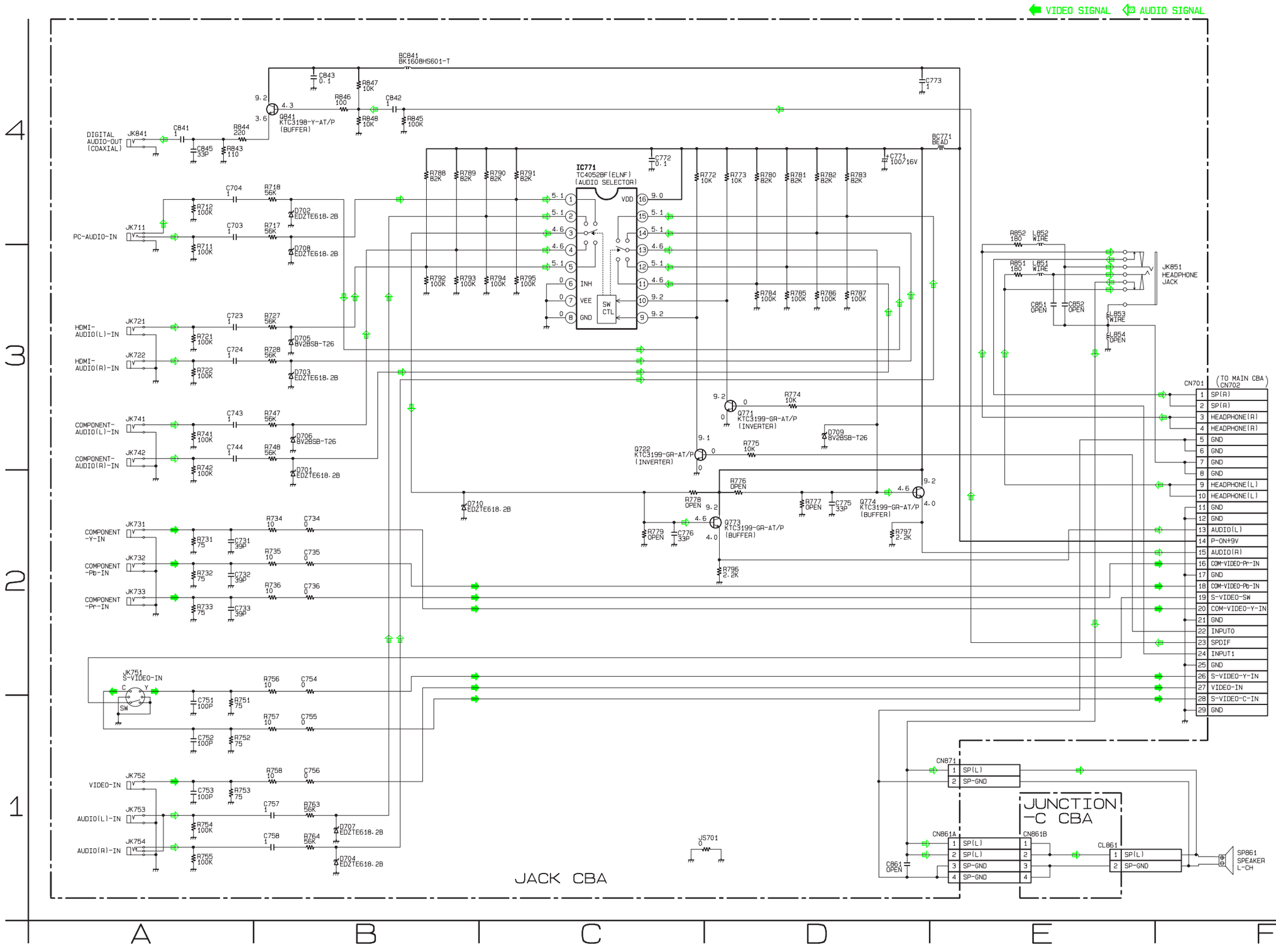
4A/125V

CAUTION ! : For continued protection against risk of fire, replace only with same type 4 A, 125V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

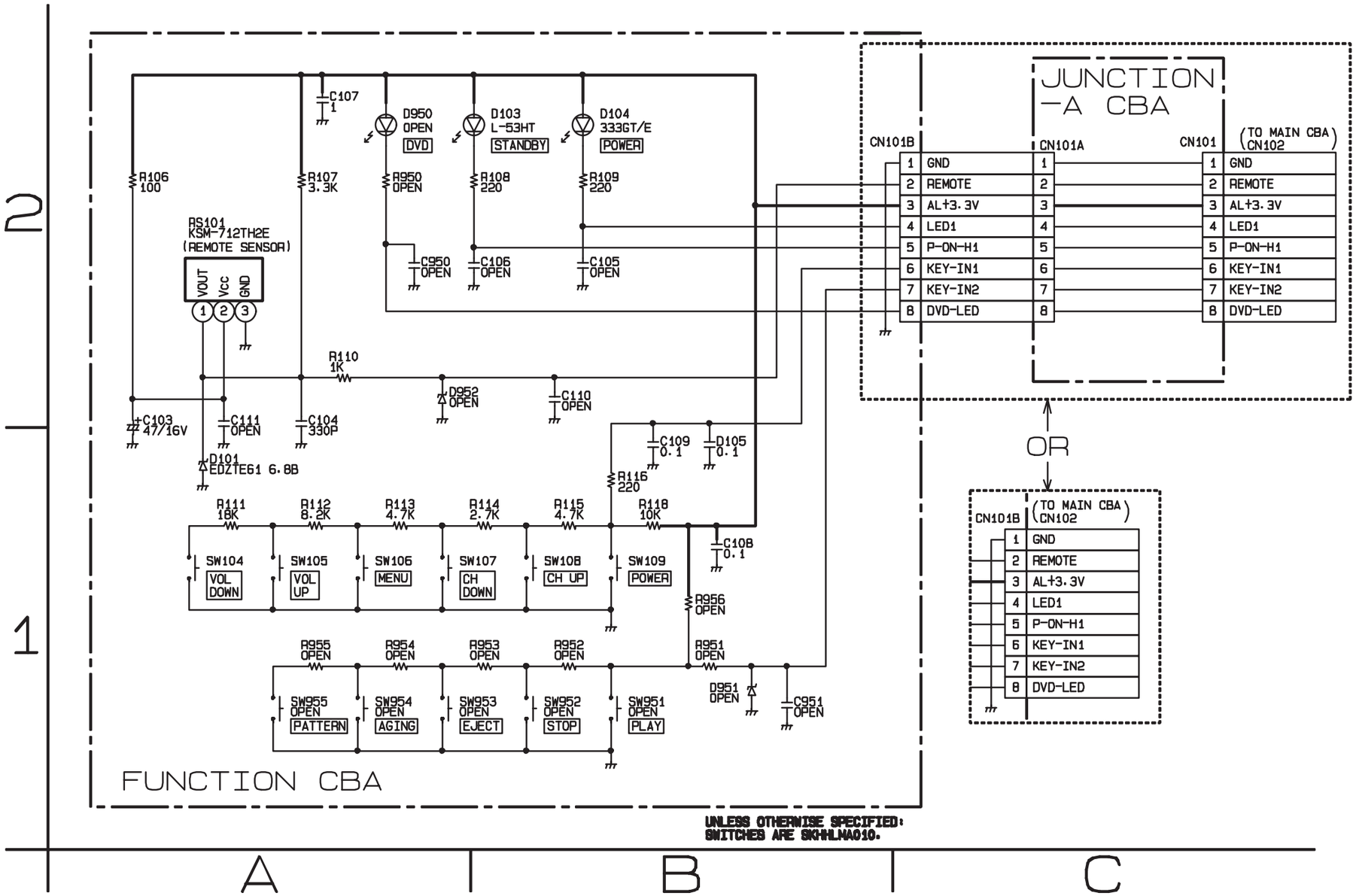
NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



Jack& Junction-C Schematic Diagram



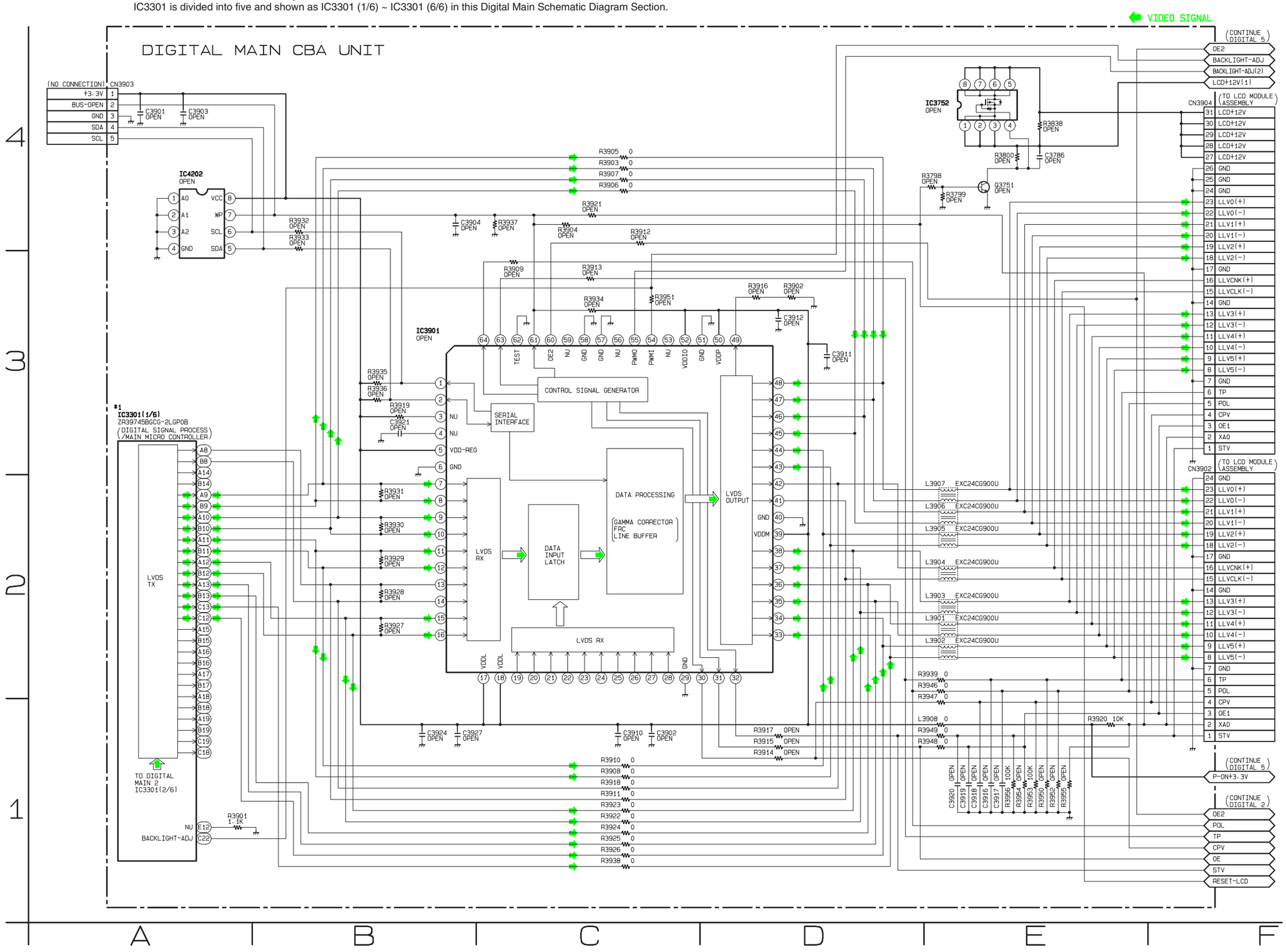
Function & Junction-A Schematic Diagram



Digital Main 1 Schematic Diagram [LC190EM1(Serial No.: DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1, LC190SS1]

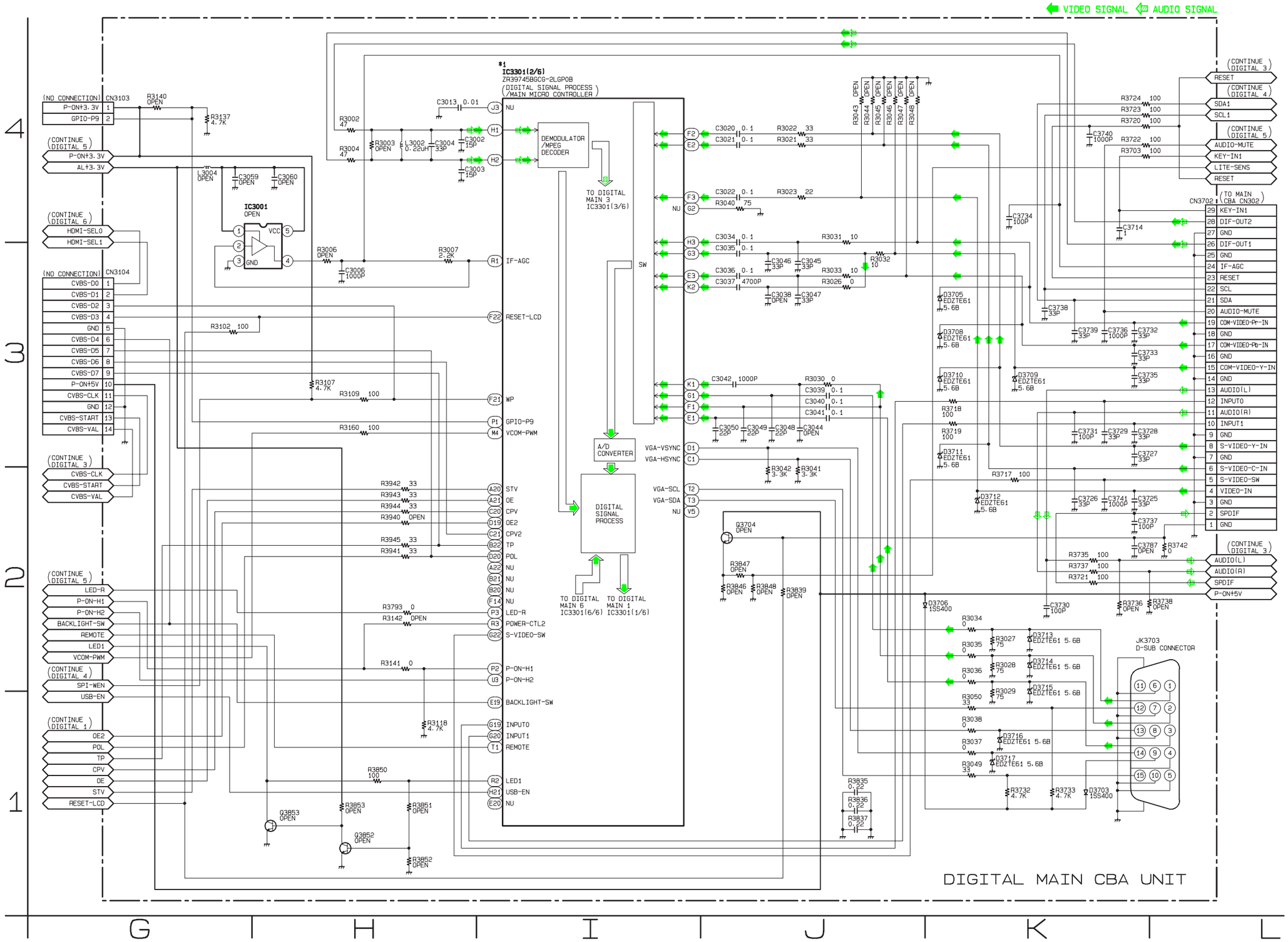
∗1 **NOTE:**

The order of pins shown in this diagram is different from that of actual IC3301.
IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.



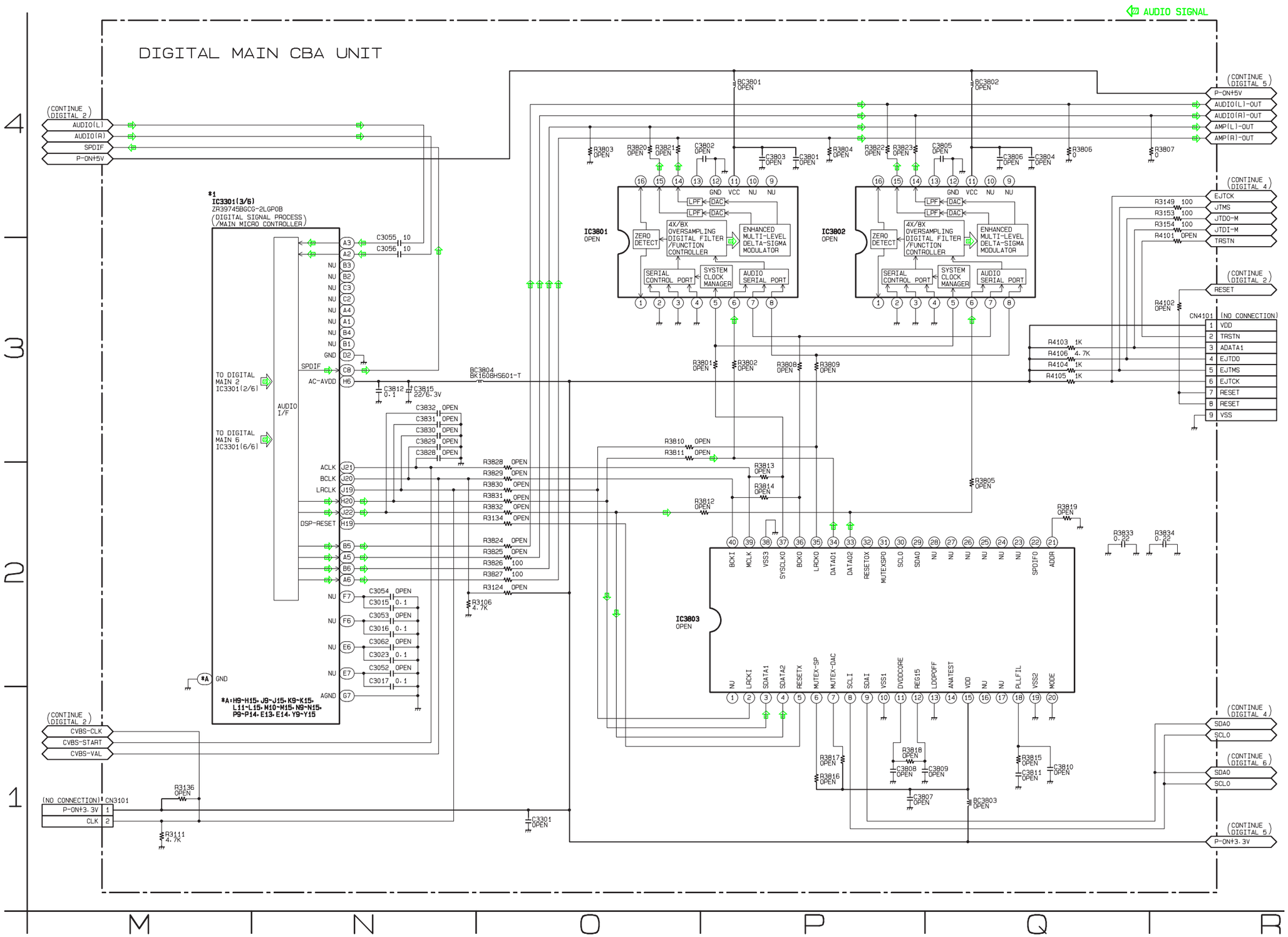
Digital Main 2 Schematic Diagram [LC190EM1(Serial No.: DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1, LC190SS1]

∗1 **NOTE:**
The order of pins shown in this diagram is different from that of actual IC3301.
IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.



Digital Main 3 Schematic Diagram [LC190EM1(Serial No.: DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1, LC190SS1]

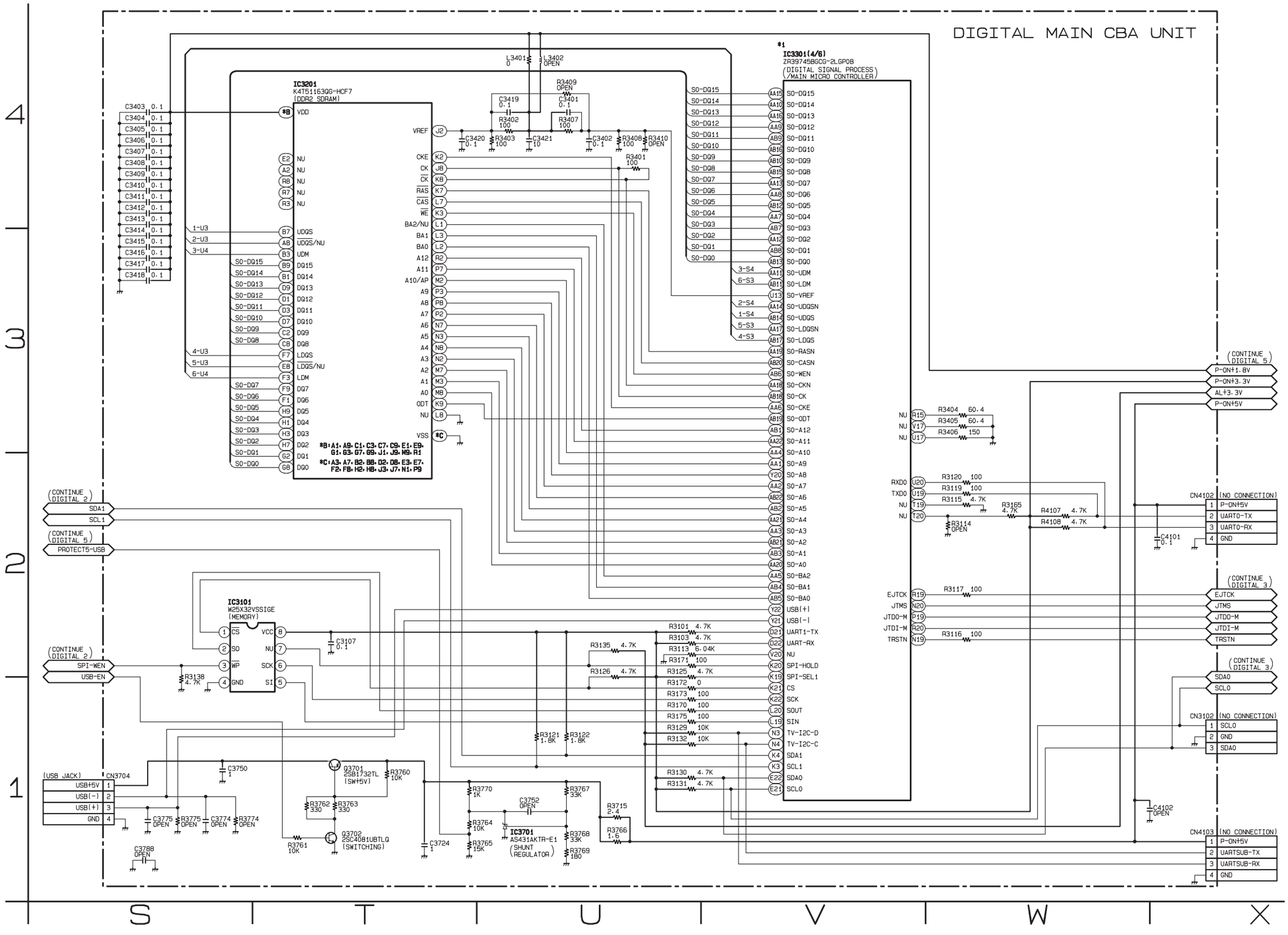
∗1 **NOTE:**
The order of pins shown in this diagram is different from that of actual IC3301.
IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.



FL10.0SCD3

Digital Main 4 Schematic Diagram [LC190EM1(Serial No.: DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1, LC190SS1]

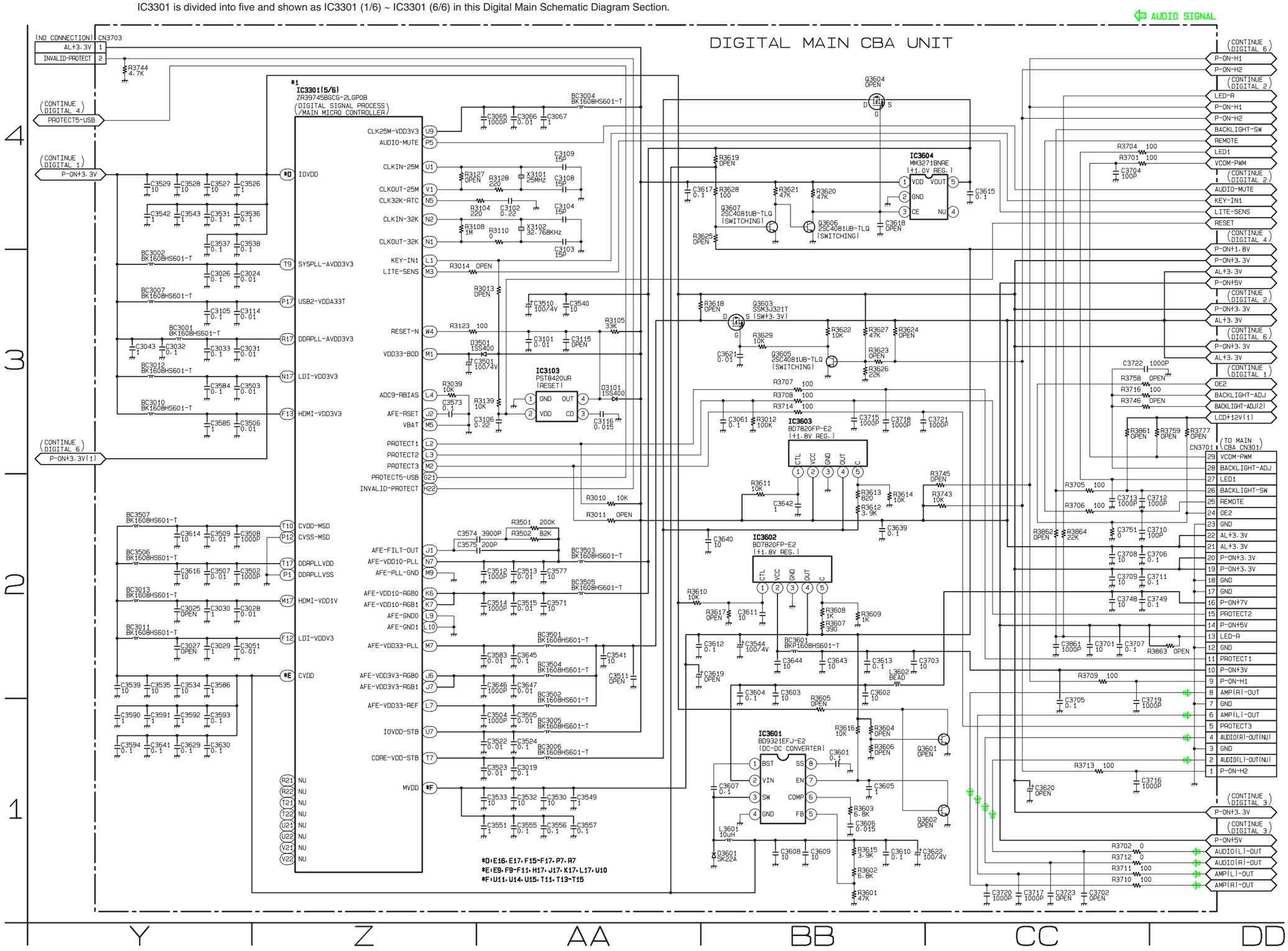
∗1 **NOTE:**
The order of pins shown in this diagram is different from that of actual IC3301.
IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.



FL10.0SCD4

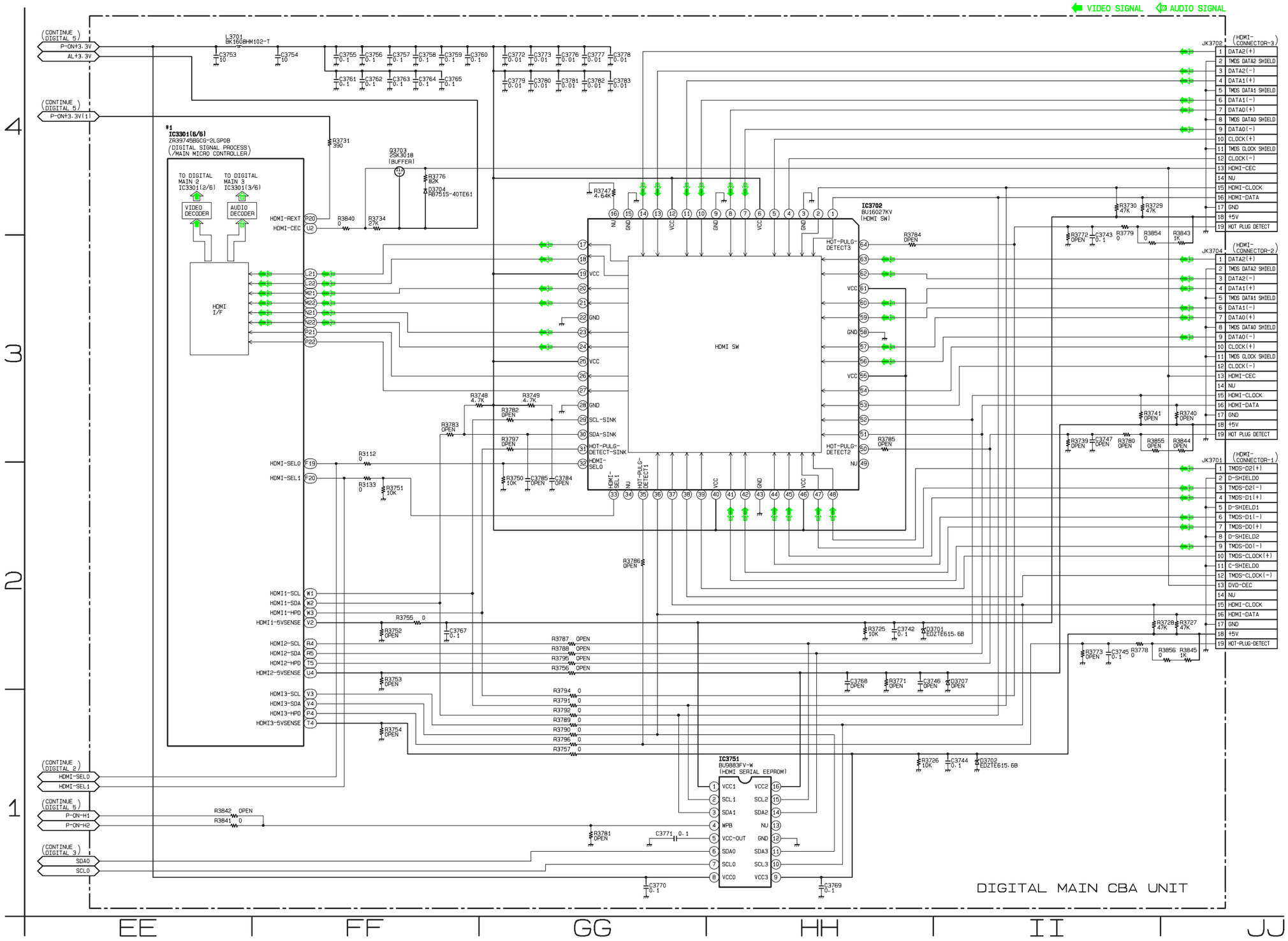
Digital Main 5 Schematic Diagram [LC190EM1(Serial No.: DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1, LC190SS1]

∗1 **NOTE:**
The order of pins shown in this diagram is different from that of actual IC3301.
IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.



Digital Main 6 Schematic Diagram [LC190EM1(Serial No.: DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1, LC190SS1]

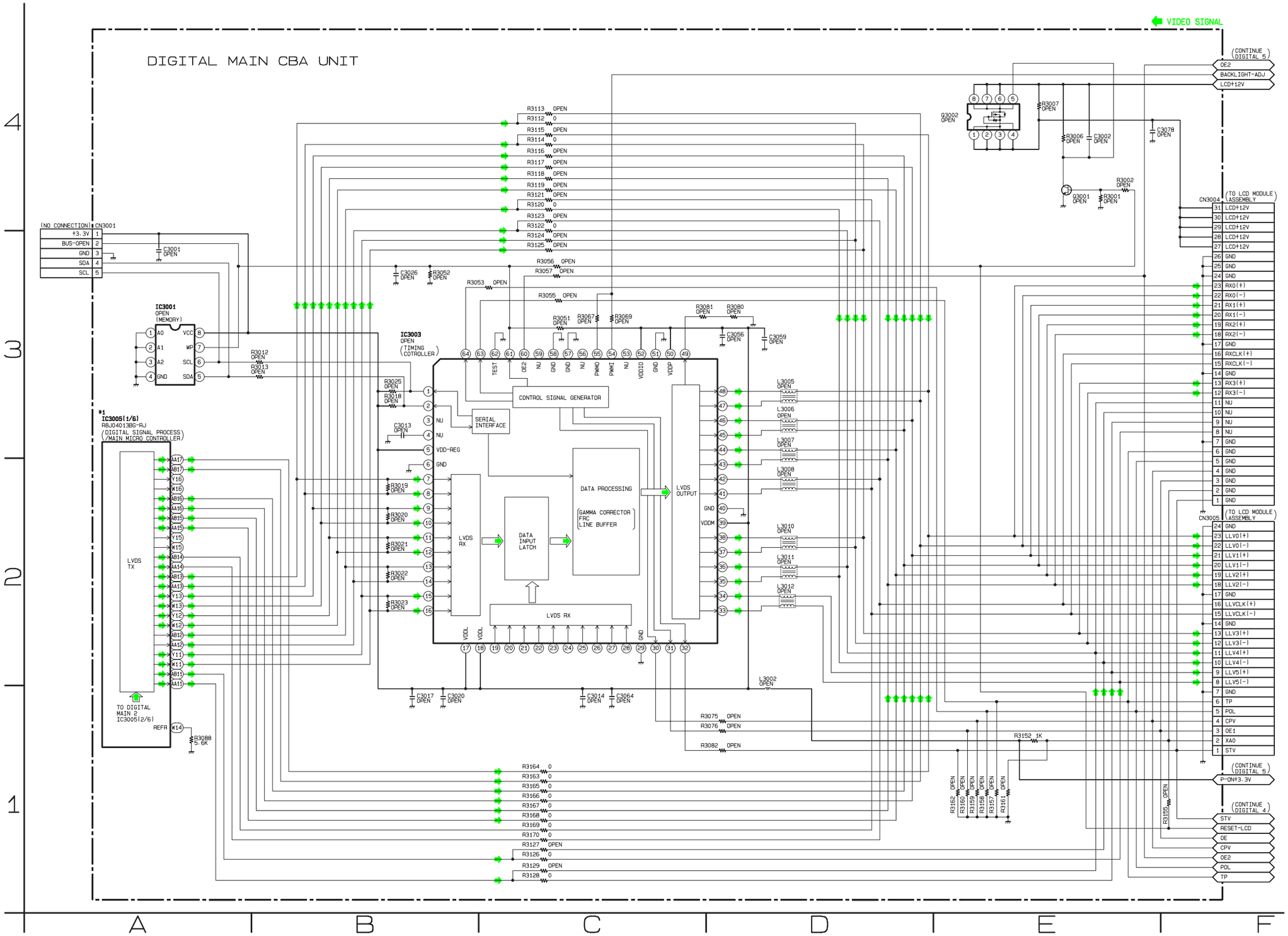
∗1 **NOTE:**
The order of pins shown in this diagram is different from that of actual IC3301.
IC3301 is divided into five and shown as IC3301 (1/6) ~ IC3301 (6/6) in this Digital Main Schematic Diagram Section.



FL10.0SCD6

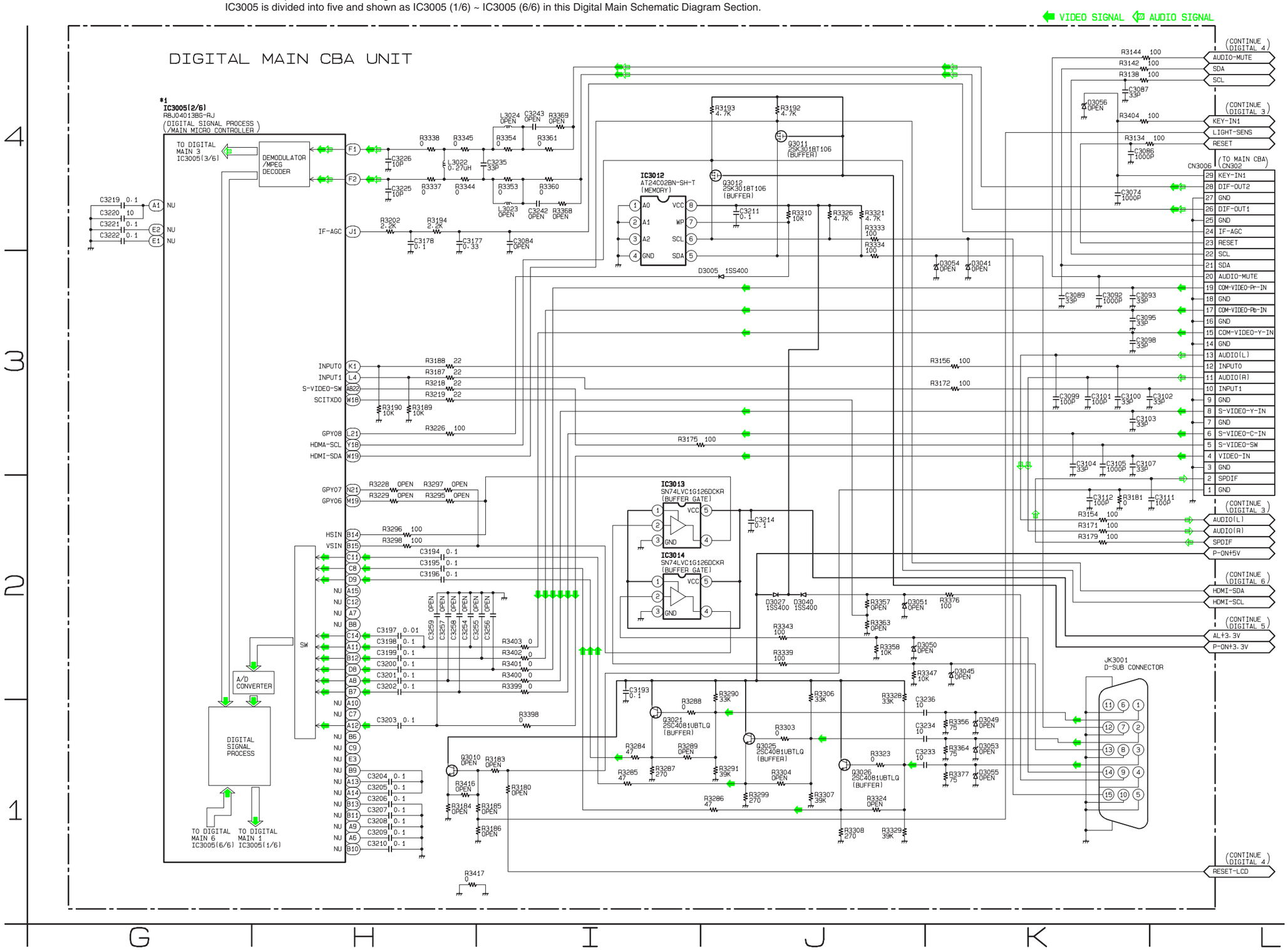
Digital Main 1 Schematic Diagram [LC190EM1(Serial No.:DS4A)]

∗1 **NOTE:**
The order of pins shown in this diagram is different from that of actual IC3005.
IC3005 is divided into five and shown as IC3005 (1/6) ~ IC3005 (6/6) in this Digital Main Schematic Diagram Section.



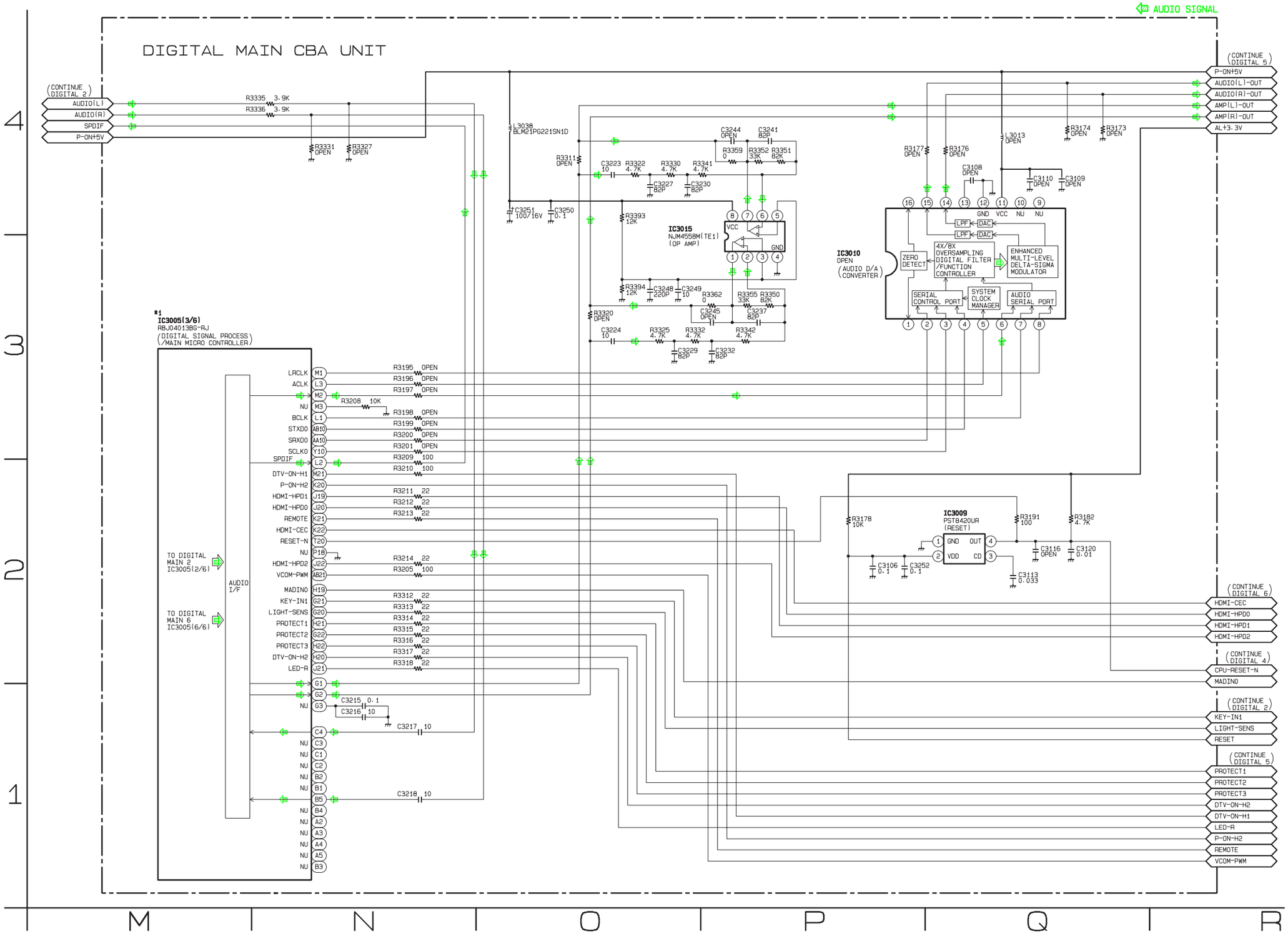
Digital Main 2 Schematic Diagram [LC190EM1(Serial No.:DS4A)]

*1 **NOTE:**
The order of pins shown in this diagram is different from that of actual IC3005.
IC3005 is divided into five and shown as IC3005 (1/6) ~ IC3005 (6/6) in this Digital Main Schematic Diagram Section.



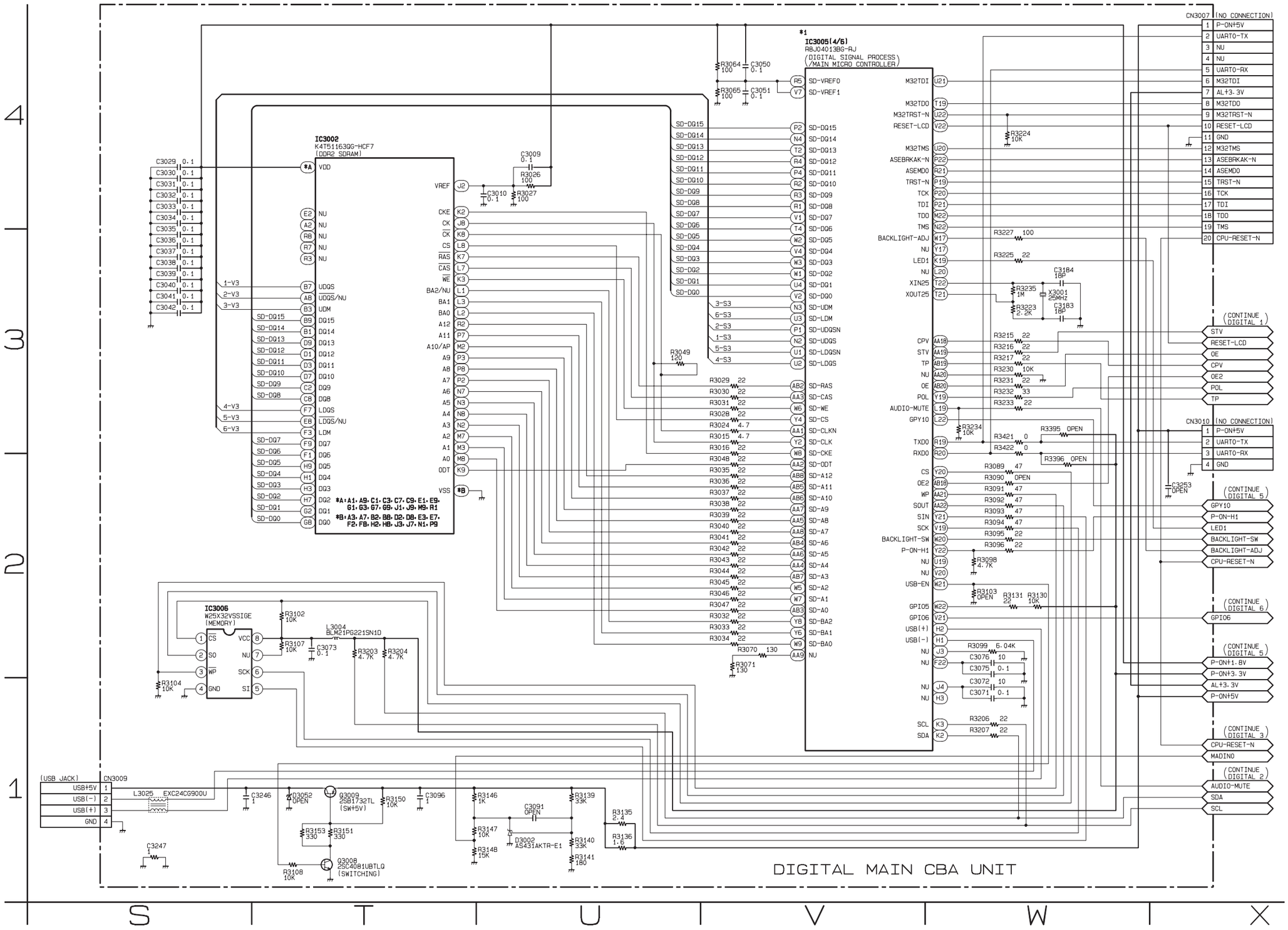
Digital Main 3 Schematic Diagram [LC190EM1(Serial No.:DS4A)]

*1 **NOTE:**
The order of pins shown in this diagram is different from that of actual IC3005.
IC3005 is divided into five and shown as IC3005 (1/6) ~ IC3005 (6/6) in this Digital Main Schematic Diagram Section.



Digital Main 4 Schematic Diagram [LC190EM1(Serial No.:DS4A)]

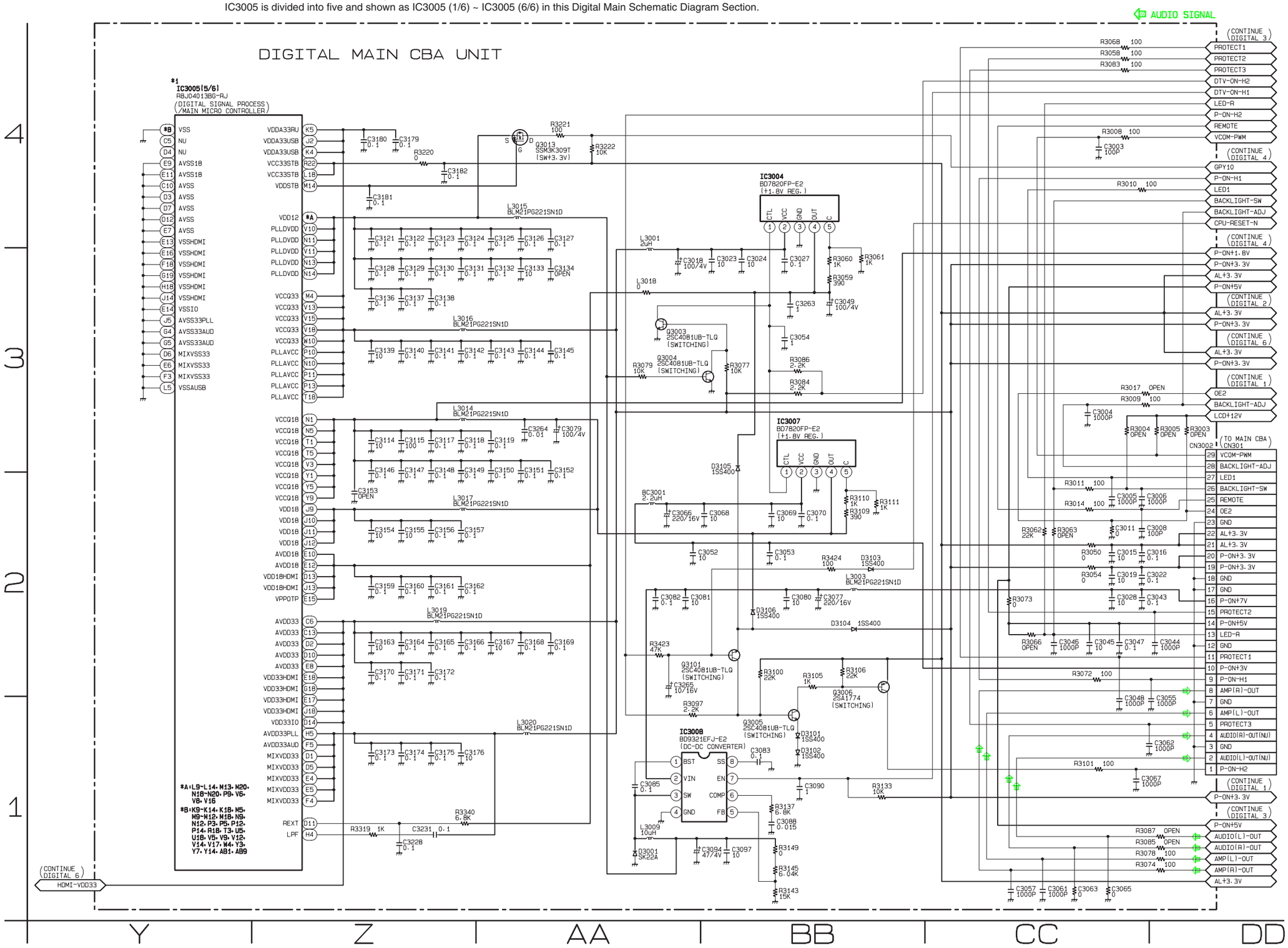
∗1 NOTE:
The order of pins shown in this diagram is different from that of actual IC3005.
IC3005 is divided into five and shown as IC3005 (1/6) ~ IC3005 (6/6) in this Digital Main Schematic Diagram Section.



FL10.0_2SCD4

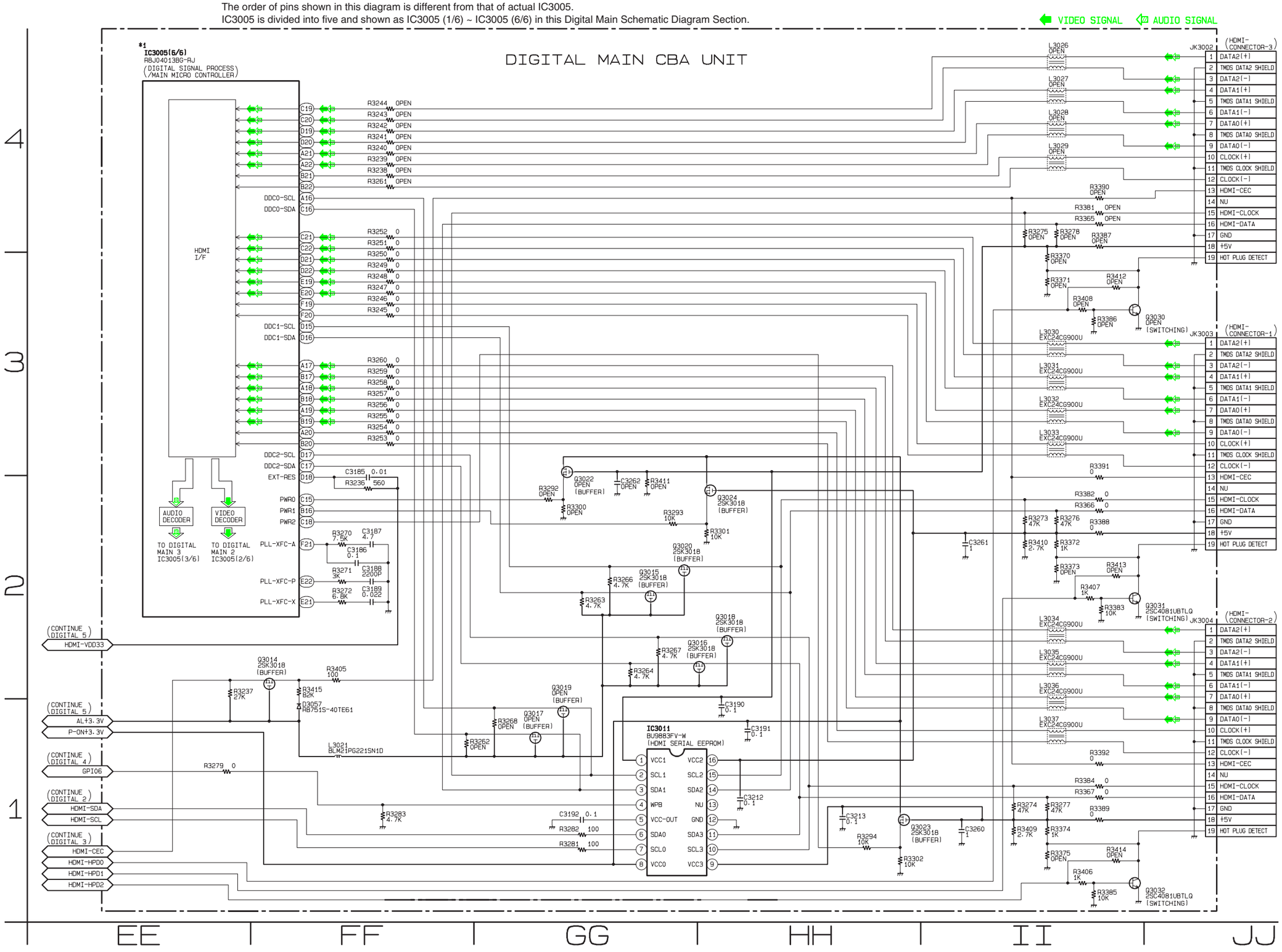
Digital Main 5 Schematic Diagram [LC190EM1(Serial No.:DS4A)]

∗1 **NOTE:**
The order of pins shown in this diagram is different from that of actual IC3005.
IC3005 is divided into five and shown as IC3005 (1/6) ~ IC3005 (6/6) in this Digital Main Schematic Diagram Section.



Digital Main 6 Schematic Diagram [LC190EM1(Serial No.:DS4A)]

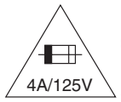
*1 **NOTE:**
The order of pins shown in this diagram is different from that of actual IC3005.
IC3005 is divided into five and shown as IC3005 (1/6) ~ IC3005 (6/6) in this Digital Main Schematic Diagram Section.



FL10.0_2SCD6

Main CBA Top View [LC190EM1, 19MF330B/F7, LC190SL1(Serial No.:DS1A,DS2A,TH1A), LC190SS1]

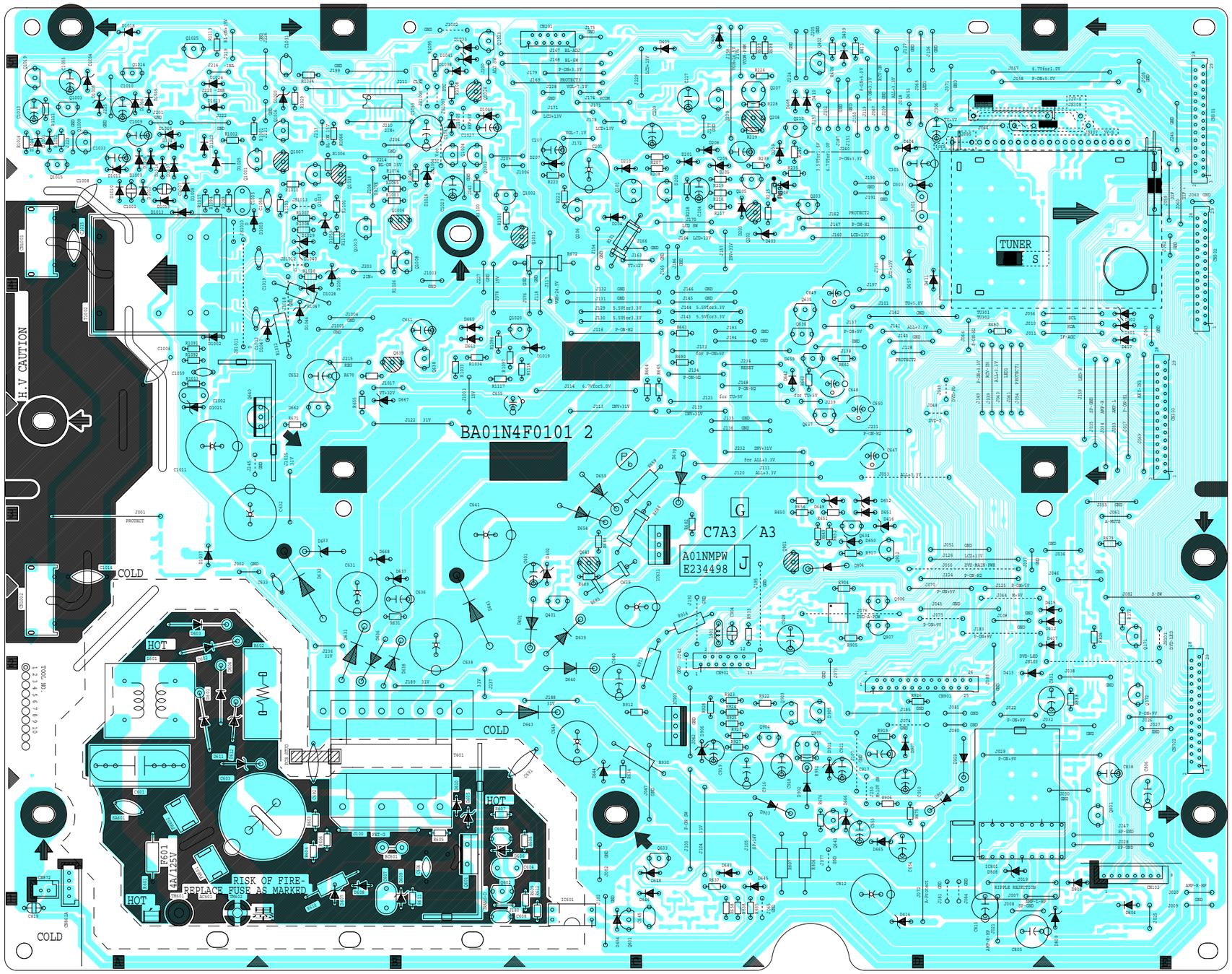
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



CAUTION ! : For continued protection against risk of fire, replace only with same type 4 A, 125V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

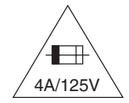
Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used when repairing. Also, in order to have the ability to increase the input slowly, when troubleshooting this type of power supply circuit, a variable isolation transformer is required.

NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



Main CBA Bottom View [LC190EM1, 19MF330B/F7, LC190SL1(Serial No.:DS1A,DS2A,TH1A), LC190SS1]

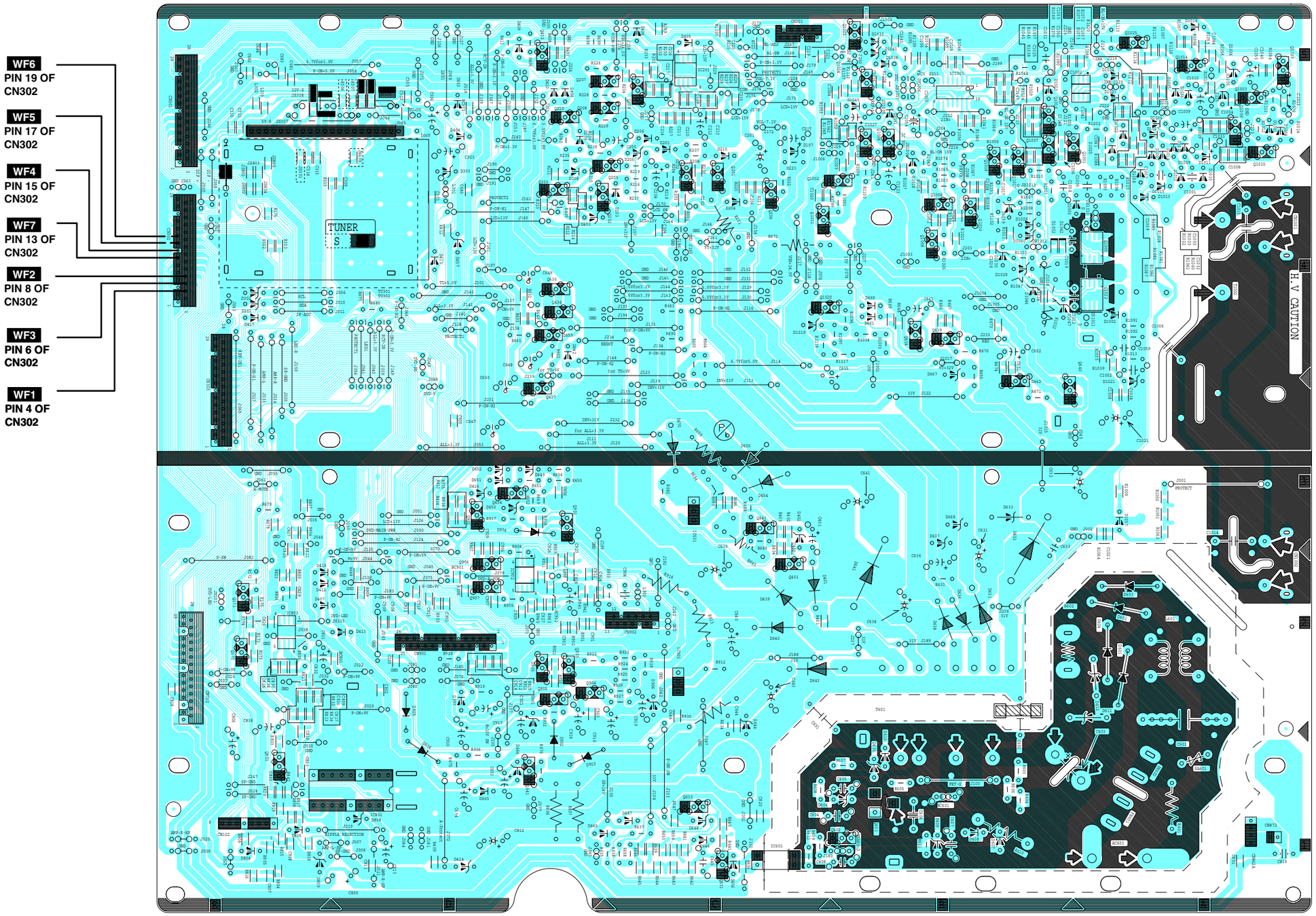
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



CAUTION ! : For continued protection against risk of fire, replace only with same type 4 A, 125V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

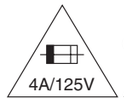
Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used when repairing. Also, in order to have the ability to increase the input slowly, when troubleshooting this type of power supply circuit, a variable isolation transformer is required.

NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



Main CBA Top View [LC190SL1(Serial No.:TH2A)]

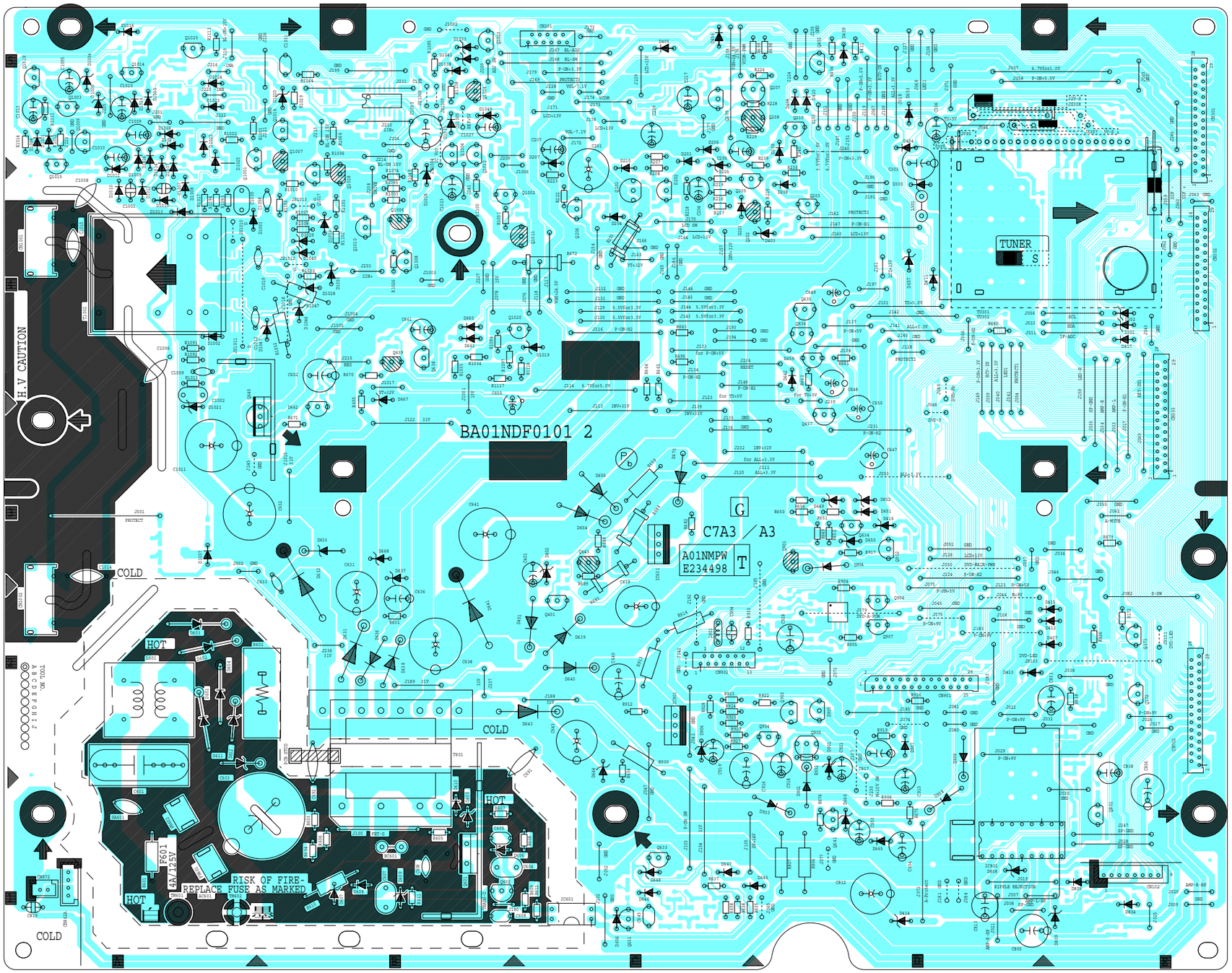
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



CAUTION ! : For continued protection against risk of fire, replace only with same type 4 A, 125V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

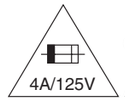
Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used when repairing. Also, in order to have the ability to increase the input slowly, when troubleshooting this type of power supply circuit, a variable isolation transformer is required.

NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



Main CBA Bottom View [LC190SL1(Serial No.:TH2A)]

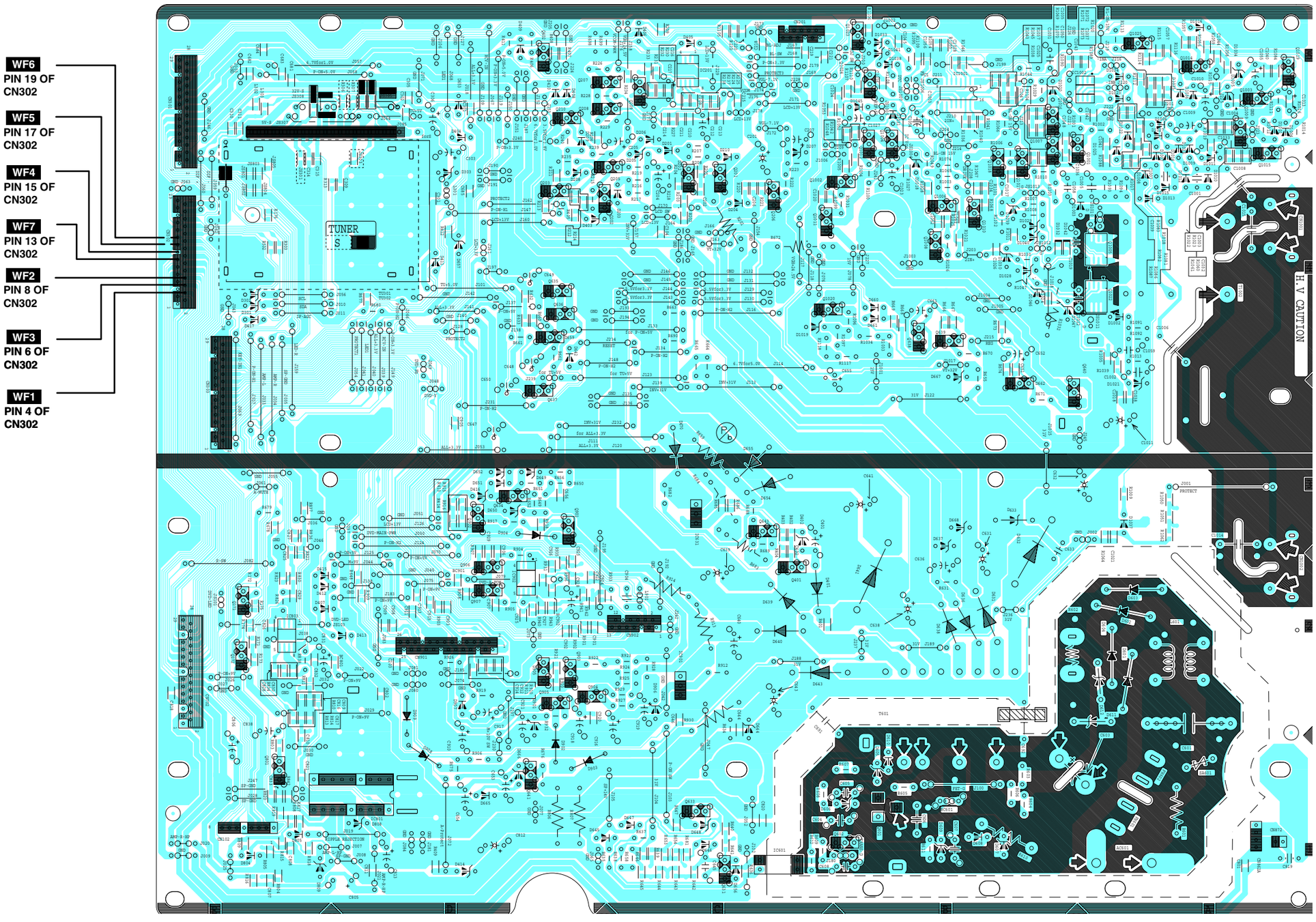
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.



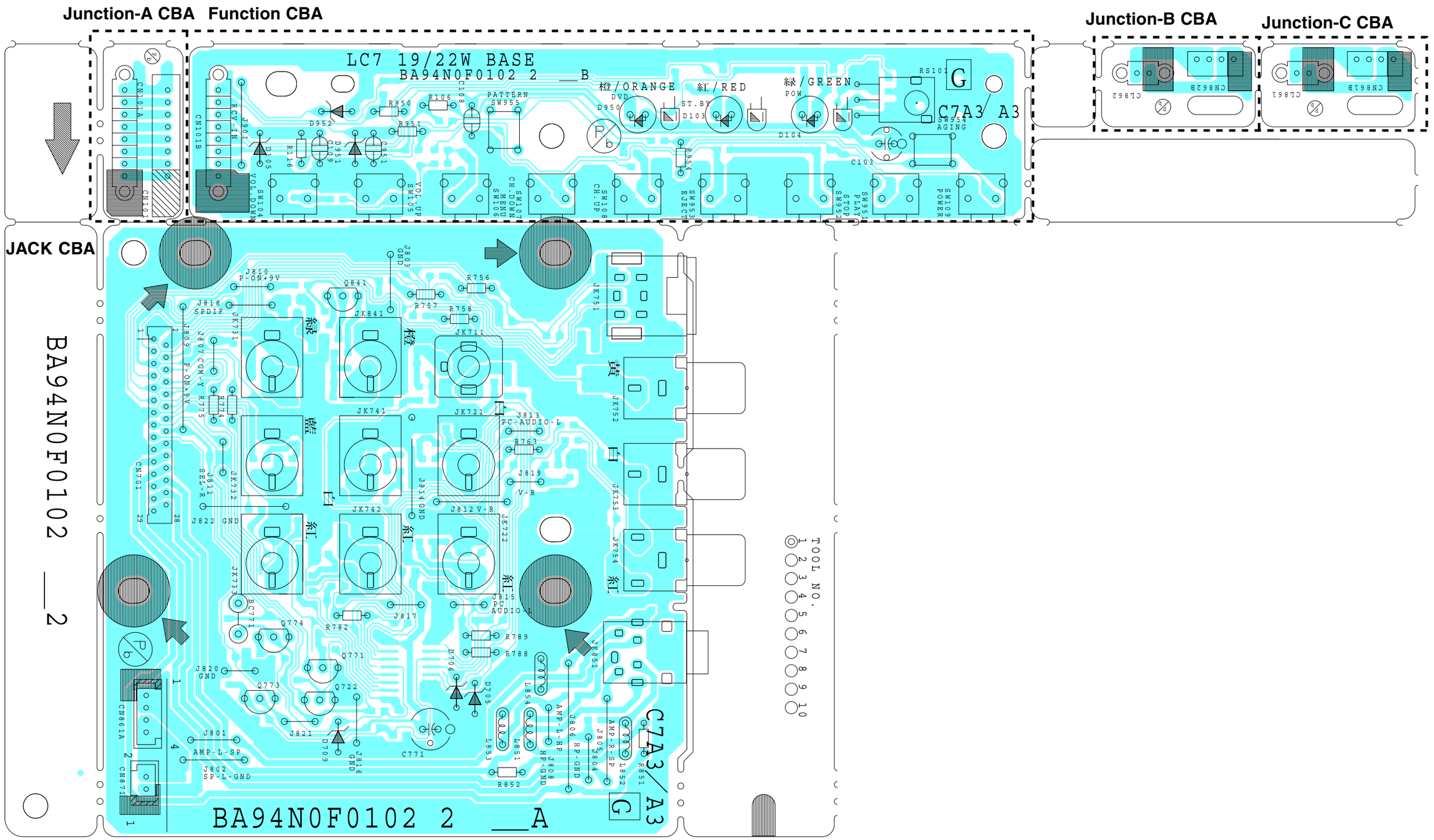
CAUTION ! : For continued protection against risk of fire, replace only with same type 4 A, 125V fuse.
ATTENTION : Utiliser un fusible de rechange de même type de 4A, 125V.

Because a hot chassis ground is present in the power supply circuit, an isolation transformer must be used when repairing. Also, in order to have the ability to increase the input slowly, when troubleshooting this type of power supply circuit, a variable isolation transformer is required.

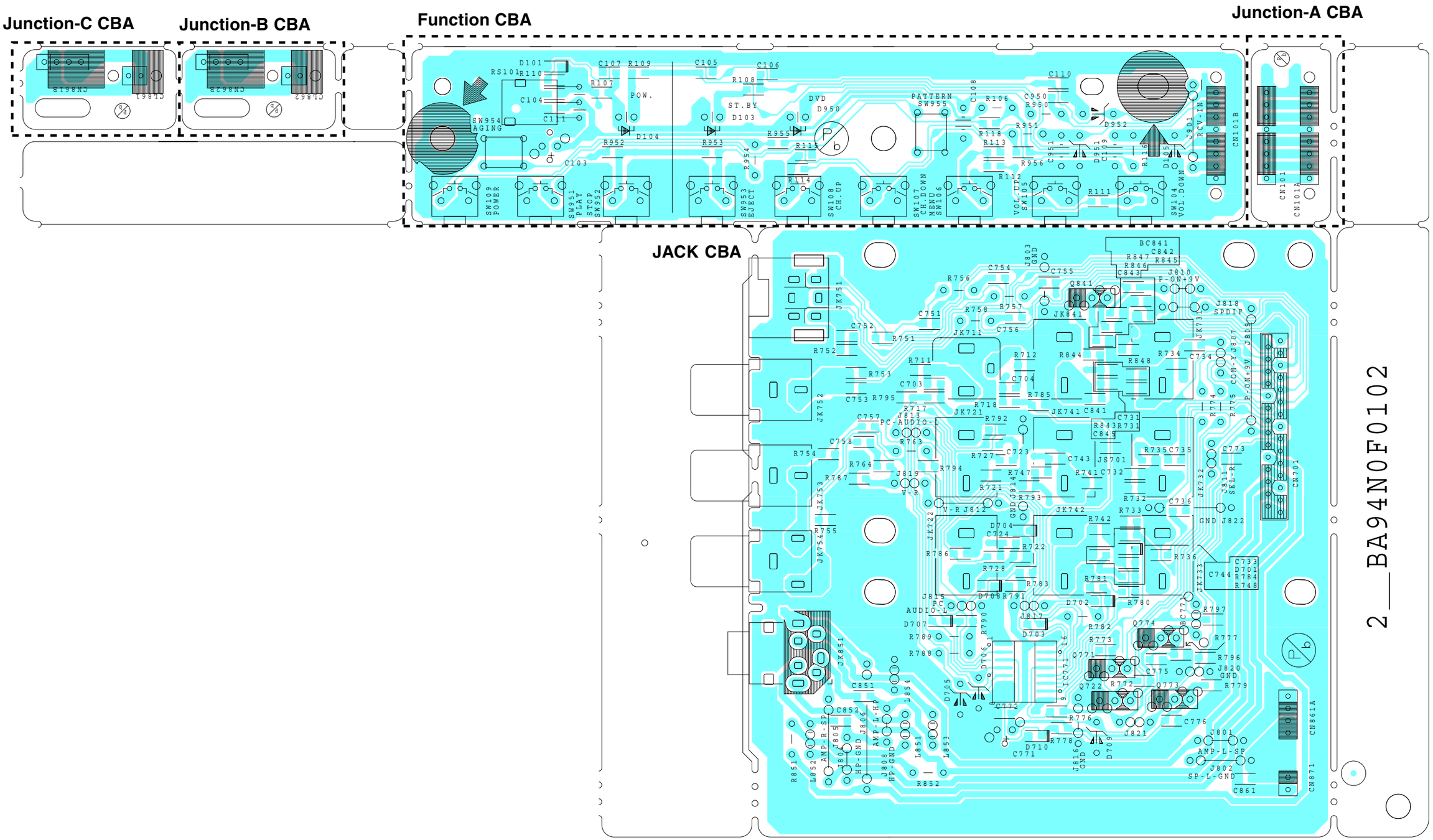
NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



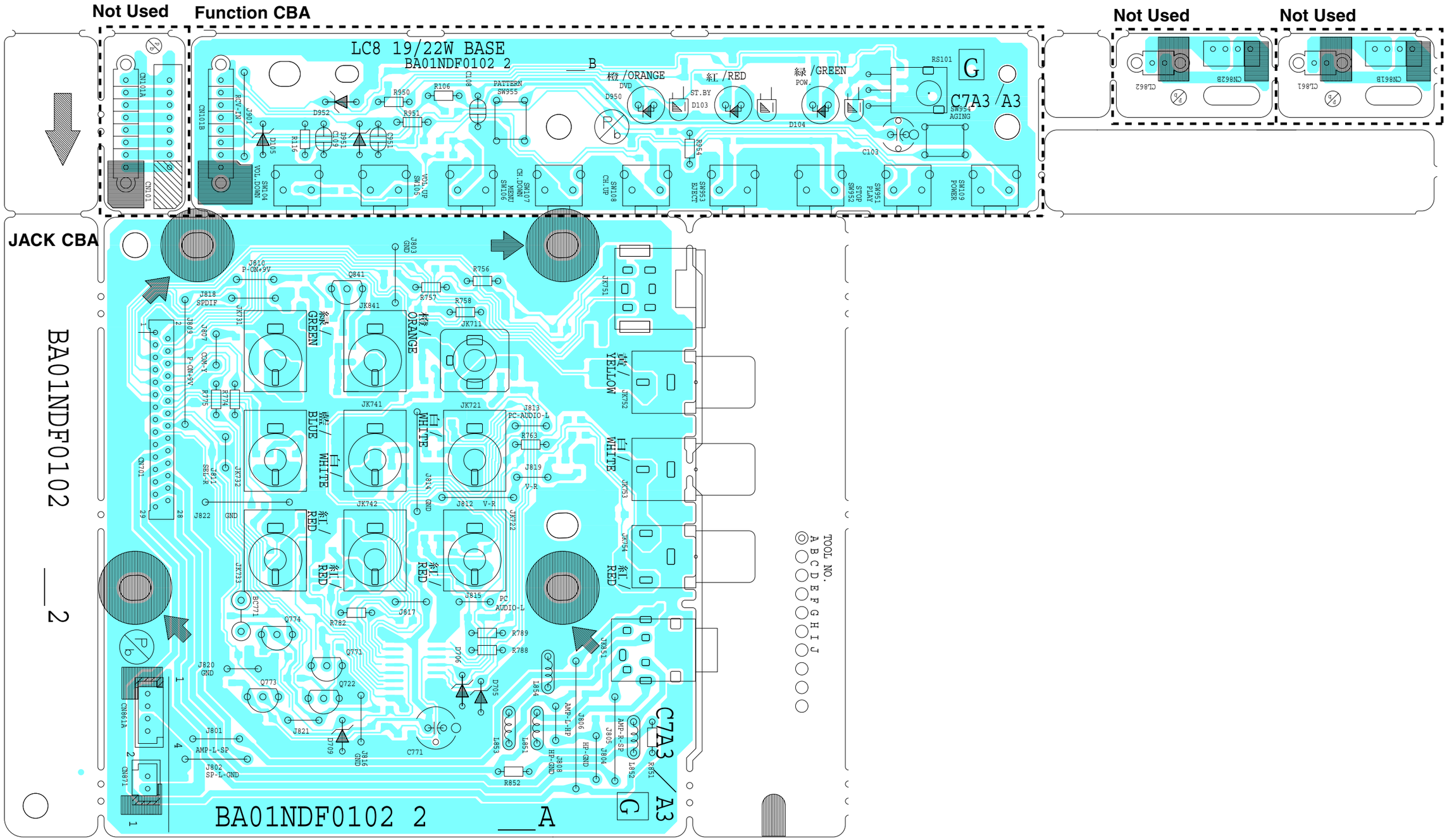
Jack CBA, Function CBA, Junction-A CBA, Junction-B CBA & Junction-C CBA Top View
[LC190EM1, 19MF330B/F7, LC190SL1(Serial No.:DS1A,DS2A,TH1A), LC190SS1]



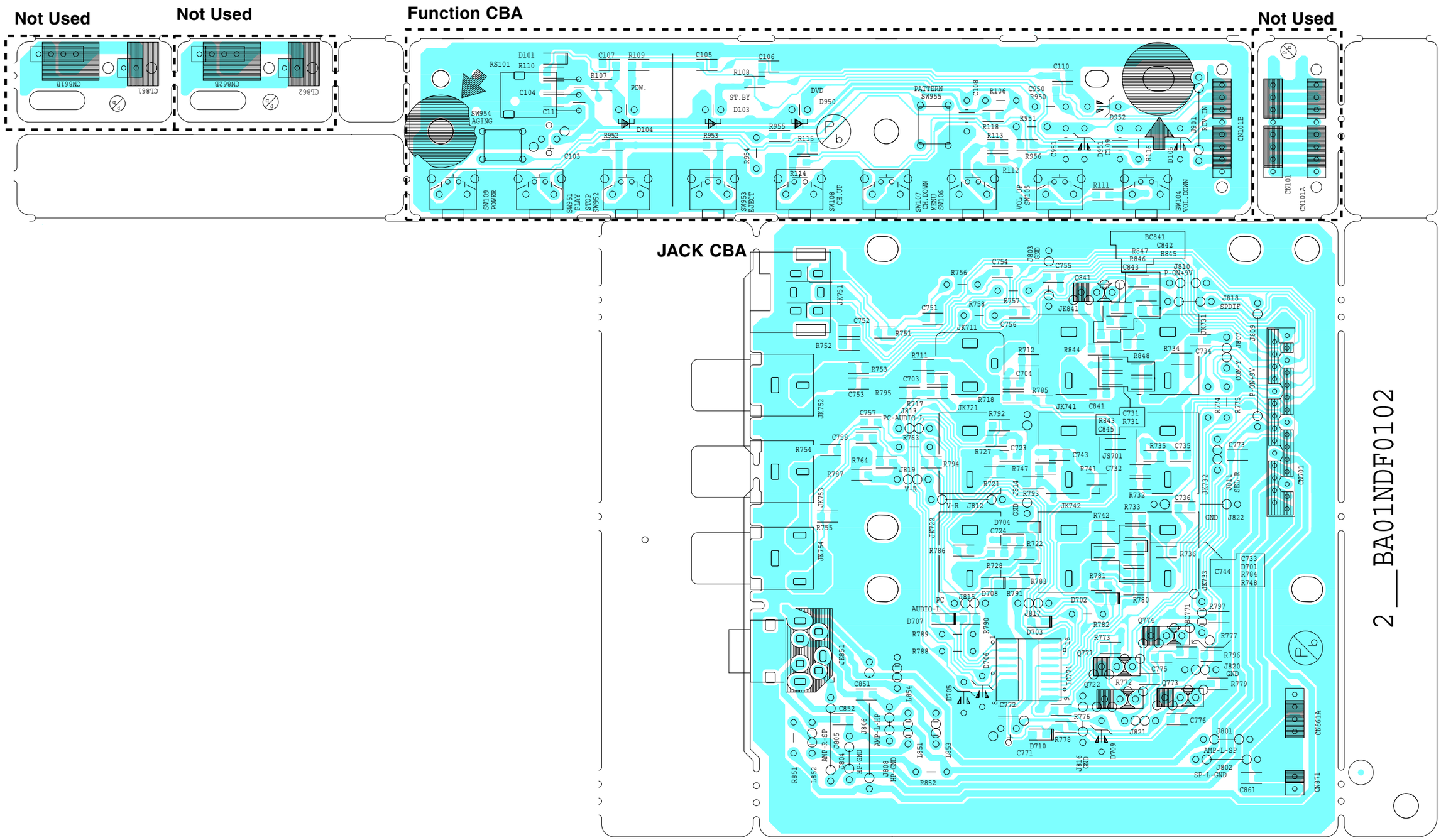
Jack CBA, Function CBA, Junction-A CBA, Junction-B CBA & Junction-C CBA Bottom View
[LC190EM1, 19MF330B/F7, LC190SL1(Serial No.:DS1A,DS2A,TH1A), LC190SS1]



Jack CBA & Function CBA Top View [LC190SL1(Serial No.:TH2A)]



Jack CBA & Function CBA Bottom View [LC190SL1(Serial No.:TH2A)]



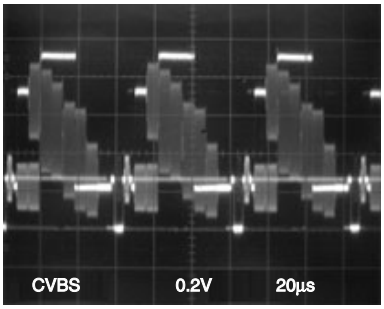
2___BA01NDF0102

WAVEFORMS

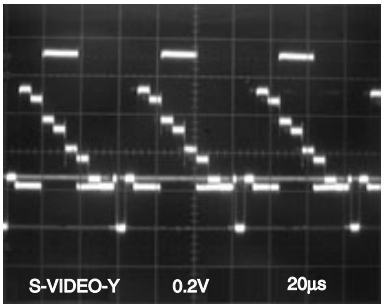
WF1 ~ WF7 = Waveforms to be observed at Waveform check points. (Shown in Schematic Diagram.)

Input: NTSC Color Bar Signal (with 1kHz Audio Signal)

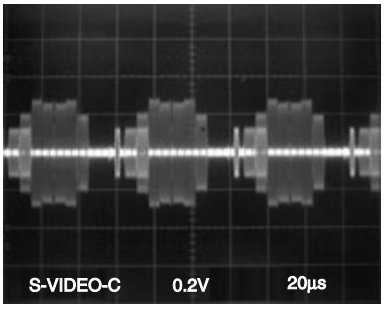
WF1 Pin 4 of CN302



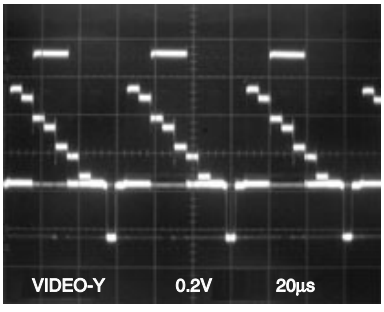
WF2 Pin 8 of CN302



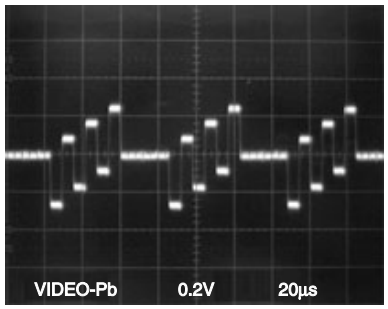
WF3 Pin 6 of CN302



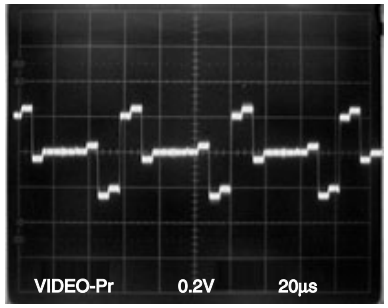
WF4 Pin 15 of CN302



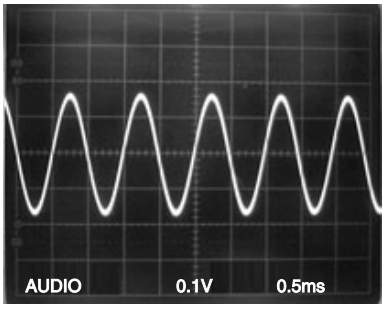
WF5 Pin 17 of CN302



WF6 Pin 19 of CN302

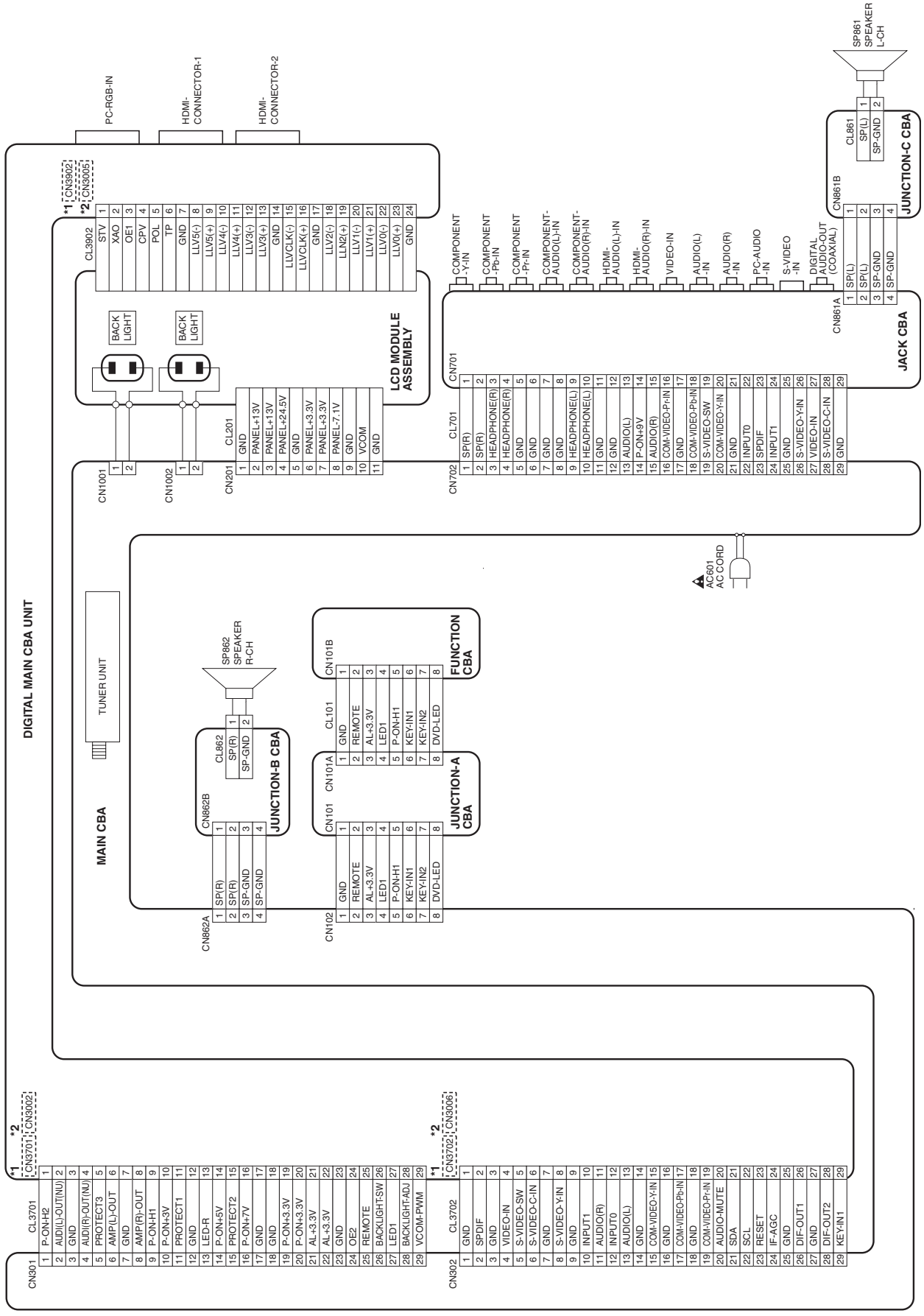


WF7 Pin 13 of CN302



WIRING DIAGRAM

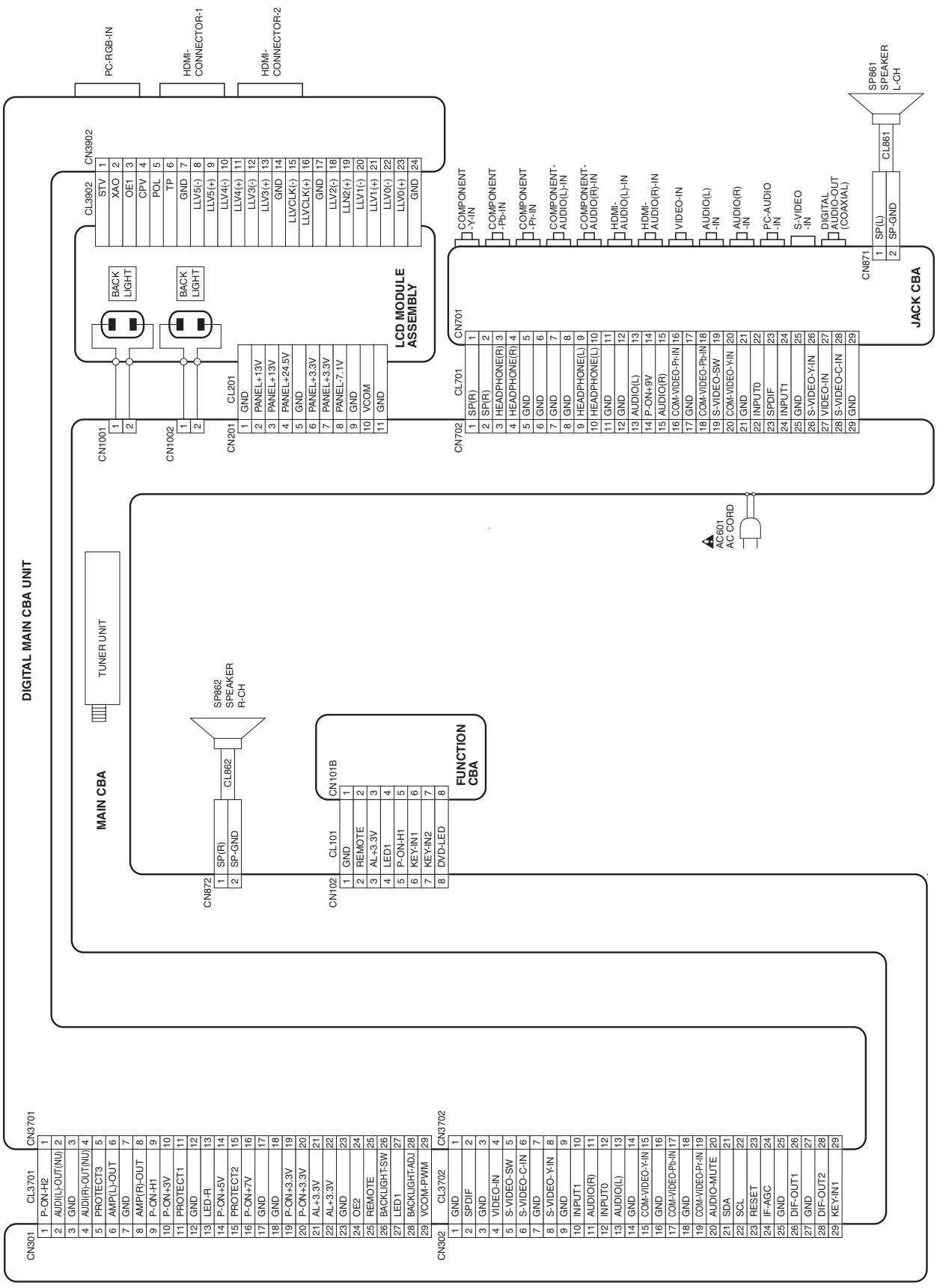
[LC190EM1, 19MF330B/F7, LC190SL1(Serial No.:DS1A,DS2A,TH1A), LC190SS1]



*1 LC190EM1 (Serial No.: DS1A,DS3A,TH1A), 19MF330B/F7, LC190SL1, LC190SS1

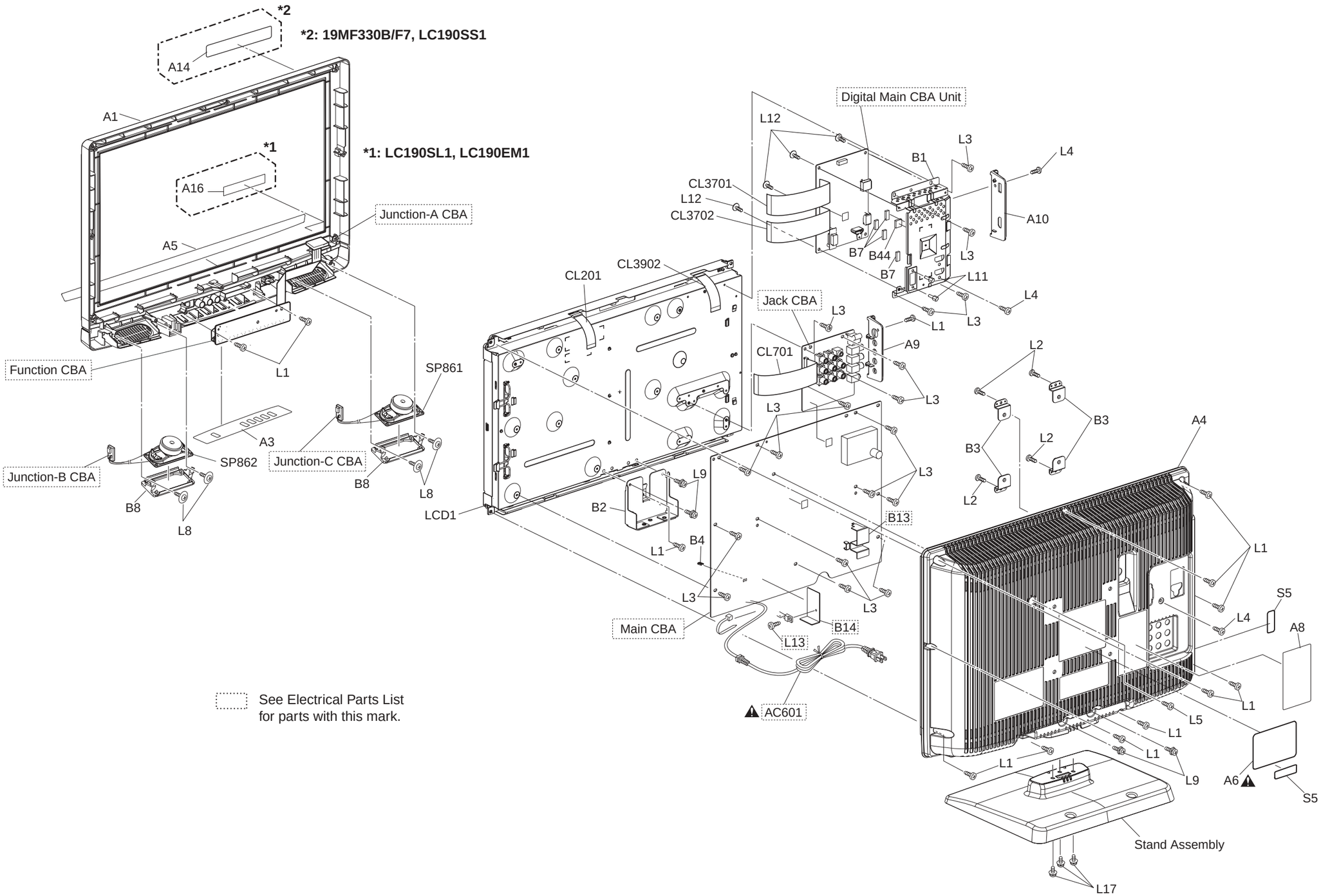
*2 LC190EM1 (Serial No.: DS4A)

[LC190SL1(Serial No.:TH2A)]



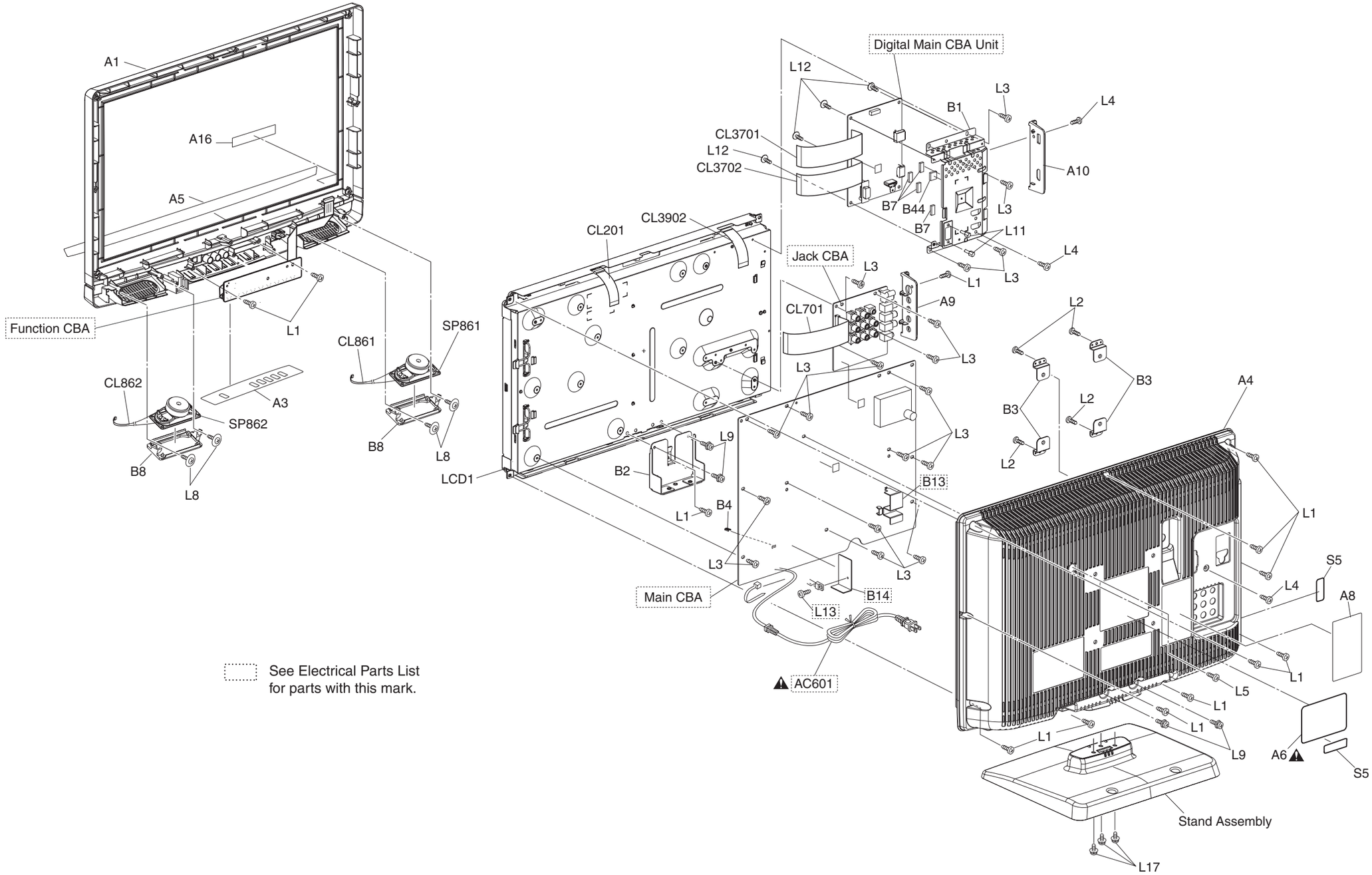
EXPLODED VIEWS

Cabinet [LC190EM1, 19MF330B/F7, LC190SL1 (Serial No. : DS1A, DS2A, TH1A), LC190SS1]



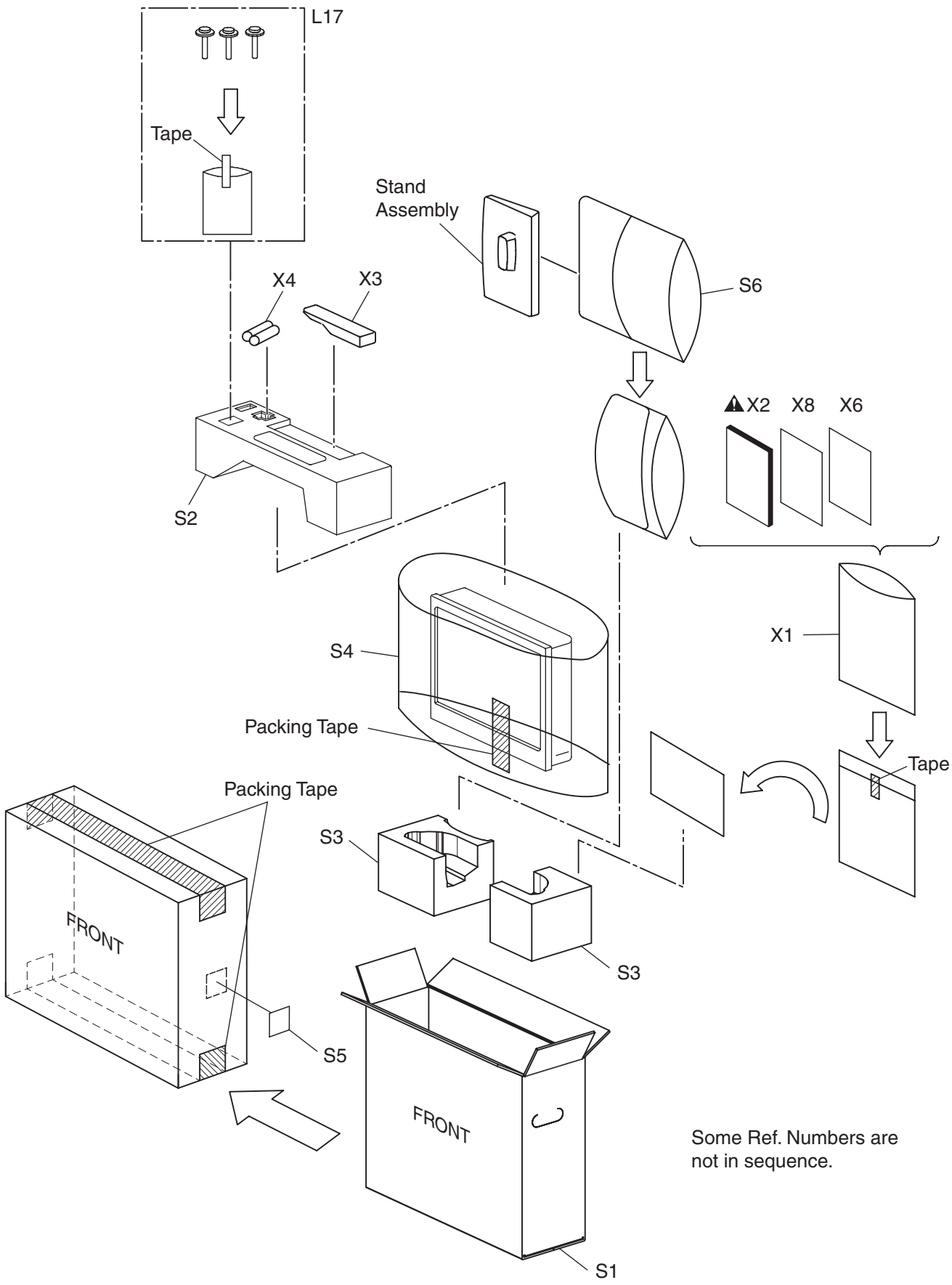
See Electrical Parts List for parts with this mark.

Cabinet [LC190SL1 (Serial No. : TH2A)]



See Electrical Parts List for parts with this mark.

Packing



Some Ref. Numbers are not in sequence.

PARTS LIST [LC190EM1 (Serial No. : DS1A)]

Mechanical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Ref. No.	Description	Part No.
	STAND ASSEMBLY A01N1UH	1ESA23630
A1	FRONT CABINET A91N4UH	1EM123296
A3	CONTROL PLATE A91N3UH	1EM325763
A4	REAR CABINET A01N0UH	1EM124316
A5	DECORATION PLATE A01N3UH	1EM223924
A6⚠	RATING LABEL A01N4UH	----------
A8	JACK LABEL A9DN0UH	1EM430877
A9	JACK HOLDER(A) A94N0UH	1EM222783
A10	JACK HOLDER(D) A94N0UH	1EM222784
A16	LOGO LABEL A8A71UH	----------
B1	SHIELD BOX A01F2UH	1EM224323
B2	STAND HOLDER A94N0UH	1EM325619
B3	WALL MOUNT BRACKET A84N0UH	1EM323797
B4	PCB STUD A91N0UH	1EM326198
B7	GASKET A8AF0UH	1EM425861
B8	SPEAKER HOLDER A94N0UH	1EM325677
B44	THERMOSTAR TMS-L-2(12*12HC)	XK10000X4003
CL201	WIRE ASSEMBLY 11PIN FFC 11PIN 75MM	WX1A94N0-105
CL701	WIRE ASSEMBLY 29PIN FFC 29PIN 50MM	WX1A94F0-101
CL3701	WIRE ASSEMBLY 29PIN FFC 29PIN 50MM	WX1A94F0-101
CL3702	WIRE ASSEMBLY 29PIN FFC 29PIN 70MM	WX1A94F0-111
CL3902	WIRE ASSEMBLY 24PIN FFC 24PIN 65MM	WX1A94N0-106
L1	SCREW P-TIGHT 3X10 BIND HEAD+	GBHP3100
L2	SCREW P-TIGHT M3X8 BIND HEAD+	GBJP3080
L3	SCREW S-TIGHT M3X6 BIND HEAD+	GBJS3060
L4	SCREW S-TIGHT M3X8 BIND HEAD+	GBHS3080
L5	SCREW TAP TIGHT M3X10 BIND HEAD+BLK NI	GBHS3100
L8	ASSEMBLED SCREW M3X10	1EM420633A
L9	DOUBLE SEMS SCREW M4X10 + BLK	FPH34100
L11	HEX SCREW #4-40 7MM	1EM430139
L12	ASSEMBLED SCREW (D9 M3X6) A71F0UH	1EM424392B
L17	STAND SCREW KIT A01N0UH	1ESA23632
LCD1	LCD MODULE 18.5INCH WIDE CMO 18.5INCH WXGA	UJ19MXA
SP861	SPEAKER S0307F03	DS08070XQ001
SP862	SPEAKER S0307F03	DS08070XQ001
PACKING		
S1	CARTON A01N4UH	1EM430917
S2	STYROFOAM TOP A91N0UH	1EM023885
S3	STYROFOAM BOTTOM A91N0UH	1EM023886
S4	SET BAG A81N0UH	1EM323958
S5	SERIAL NO. LABEL A01PBUH	----------
S6	STAND BAG A81N0UH	1EM425888
ACCESSORIES		
X1	BAG POLYETHYLENE 235X365XT0.03	0EM408420A
X2⚠	OWNERS MANUAL A01N4UH	1EMN25819
X3	REMOTE CONTROL NH001UD	NH001UD
X4	DRY BATTERY R03/2S	XB0M451T0006
X6	QUICK START GUIDE A01N4UH	1EMN25820
X8	CHILD SAFETY SHEET A94F1UH	1EMN24522

Electrical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTES:

1. Parts that are not assigned part numbers (---------) are not available.
2. Tolerance of Capacitors and Resistors are noted with the following symbols.

C.....±0.25% D.....±0.5% F.....±1%

G.....±2% J.....±5% K.....±10%

M.....±20% N.....±30% Z.....+80/-20%

DIGITAL MAIN CBA UNIT

Ref. No.	Description	Part No.
	DIGITAL MAIN CBA UNIT	A01N4MMA-001

MAIN CBA

Ref. No.	Description	Part No.
	MAIN CBA Consists of the following:	A01N0MPWA001
	CAPACITORS	
C201	ELECTROLYTIC CAP. 470μF/25V M	CE1EMASDL471
C202	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C203	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C204	ELECTROLYTIC CAP. 10μF/50V M	CE1JMASDL100
C207	ELECTROLYTIC CAP. 10μF/50V M	CE1JMASDL100
C209	ELECTROLYTIC CAP. 47μF/25V M	CE1EMASDL470
C214	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C215	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C216	CHIP CERAMIC CAP. (1608) B K 1μF/16V	CHD1CK30B105
C217	ELECTROLYTIC CAP. 47μF/25V M	CE1EMASDL470
C218	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C219	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C220	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C221	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C301	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C302	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C303	ELECTROLYTIC CAP. 330μF/10V M	CE1AMASDL331
C304	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C305	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C306	ELECTROLYTIC CAP. 22μF/50V M	CE1JMASDL220
C309	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C310	CHIP CERAMIC CAP.(1608) CH J 47pF/50V	CHD1JJ3CH470
C311	CHIP CERAMIC CAP.(1608) CH J 47pF/50V	CHD1JJ3CH470
C401	ELECTROLYTIC CAP. 1μF/50V M	CE1JMASDL1R0
C601⚠	CAP METALIZED FILM 0.47μF/300V K 3.5MM	CT2F474DC004
C603	CAP ELECTROLYTIC 270μF/200V	CEA271DYG005
C604	POLYESTER FILM CAP. (PB FREE) 0.039μF/ 100V J	CA2A393DT018
C605	POLYESTER FILM CAP. (PB FREE) 0.0012μF/ 100V J	CA2A122DT018
C606	CERAMIC CAP. 560pF/2KV	CA3D561PAN04
C607	POLYESTER FILM CAP. (PB FREE) 0.082μF/ 100V J	CA2A823DT018
C608	POLYESTER FILM CAP. (PB FREE) 0.0018μF/ 100V J	CA2A182DT018
C631	ELECTROLYTIC CAP. 470μF/25V M	CE1EMASDL471
C632	ELECTROLYTIC CAP. 1000μF/35V M	CE1GMZPDL102
C633	CERAMIC CAP. B K 1500pF/1KV	CCD3AKN0B152
C636⚠	ELECTROLYTIC CAP. 100μF/25V M	CE1EMASDL101
C638	ELECTROLYTIC CAP. 2200μF/6.3V M	CE0KMZPDL222
C639	ELECTROLYTIC CAP. 2200μF/6.3V M	CE0KMZPDL222
C641	ELECTROLYTIC CAP. 3300μF/10V M	CE1AMZPDL332
C643	ELECTROLYTIC CAP. 1000μF/25V M	CE1EMZPDL102
C645	POLYESTER FILM CAP. (PB FREE) 0.0022μF/ 100V J	CA2A222DT018
C646	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C647	ELECTROLYTIC CAP. 100μF/10V M H7	CE1AMAVSL101
C648	ELECTROLYTIC CAP. 47μF/25V M H7	CE1EMAVSL470
C649	ELECTROLYTIC CAP. 220μF/10V M H7	CE1AMAVSL221
C650	ELECTROLYTIC CAP. 220μF/10V M H7	CE1AMAVSL221
C652	ELECTROLYTIC CAP. 1000μF/6.3V M	CE0KMASDL102
C653	ELECTROLYTIC CAP. 22μF/50V M	CE1JMASDL220
C654	ELECTROLYTIC CAP. 100μF/16V M	CE1CMASDL101
C655	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C656	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C661	ELECTROLYTIC CAP. 3.3μF/50V M	CE1JMASDL3R3
C681	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C682	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C683	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C684	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C685	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C691⚠	CAP CERAMIC 4700pF/250V/M/KX	CA2E472MR101
C692⚠	SAFTY CAP. 2200pF/250V KX	CA2E222MR101
C802	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C805	ELECTROLYTIC CAP. 330μF/25V M	CE1EMASDL331
C806	ELECTROLYTIC CAP. 330μF/25V M	CE1EMASDL331
C807	CHIP CERAMIC CAP.(1608) B K 0.022μF/25V	CHD1EK30B223
C808	CHIP CERAMIC CAP.(1608) B K 0.022μF/25V	CHD1EK30B223
C809	CHIP CERAMIC CAP. (1608) B K 1μF/16V	CHD1CK30B105
C810	CHIP CERAMIC CAP. (1608) B K 1μF/16V	CHD1CK30B105
C811	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C812	ELECTROLYTIC CAP. 470μF/25V M	CE1EMASDL471
C813	ELECTROLYTIC CAP. 100μF/25V M	CE1EMASDL101
C816	CHIP CERAMIC CAP. CH J 820pF/50V	CHD1JJ3CH821
C817	CHIP CERAMIC CAP. CH J 820pF/50V	CHD1JJ3CH821
C825	CHIP CERAMIC CAP. (1608) B K 1μF/16V	CHD1CK30B105
C826	CHIP CERAMIC CAP.(1608) CH J 390pF/50V	CHD1JJ3CH391
C827	CHIP CERAMIC CAP. (1608) B K 1μF/16V	CHD1CK30B105
C828	CHIP CERAMIC CAP.(1608) CH J 390pF/50V	CHD1JJ3CH391
C829	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C830	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C831	ELECTROLYTIC CAP. 100μF/16V M	CE1CMASDL101
C832	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C833	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C1001	CAP CERAMIC (AX) 2200pF/50V/B/K	CA1J222TU061
C1002	POLYESTER FILM CAP. (PB FREE) 0.022μF/ 100V J	CA2A223DT018
C1003	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1004	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1005	POLYESTER FILM CAP. (PB FREE) 0.022μF/ 100V J	CA2A223DT018
C1006	CAP CERAMIC HV 10pF/6.3KV/SL/J	CCA1000MR001

Ref. No.	Description	Part No.
C1007	CAP CERAMIC (AX) 2200pF/50V/B/K	CA1J222TU061
C1008	CAP CERAMIC HV 10pF/6.3KV/SL/J	CCA1000MR001
C1009	ELECTROLYTIC CAP. 10μF/50V M	CE1JMASDL100
C1010	ELECTROLYTIC CAP. 10μF/50V M	CE1JMASDL100
C1011	ELECTROLYTIC CAP. 1000μF/35V M	CE1GMZPDL102
C1012	CERAMIC CAP. B K 220pF/500V	CCD2JKS0B221
C1014	CAP CERAMIC HV 10pF/6.3KV/SL/J	CCA1000MR001
C1015	CAP CERAMIC HV 10pF/6.3KV/SL/J	CCA1000MR001
C1016	CHIP CERAMIC CAP.(1608) B K 6800pF/50V	CHD1JK30B682
C1018	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C1019	CERAMIC CAP. B K 220pF/500V	CCD2JKS0B221
C1020	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C1023	ELECTROLYTIC CAP. 10μF/50V M	CE1JMASDL100
C1024	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1025	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1026	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C1027	ELECTROLYTIC CAP. 10μF/50V M	CE1JMASDL100
C1028	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1031	POLYESTER FILM CAP. (PB FREE) 0.0027μF/ 100V J	CA2A272DT018
C1032	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1033	ELECTROLYTIC CAP. 10μF/50V M	CE1JMASDL100
C1034	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1035	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1037	CHIP CERAMIC CAP. (1608) B K 1μF/16V	CHD1CK30B105
C1038	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C1039	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1040	CHIP CERAMIC CAP.(1608) B K 1000pF/50V	CHD1JK30B102
C1041	CHIP CERAMIC CAP.(1608) B K 0.01μF/50V	CHD1JK30B103
C1042	CHIP CERAMIC CAP.(1608) F Z 0.22μF/50V	CHD1JZ30F224
C1043	CHIP CERAMIC CAP.(1608) B K 0.22μF/16V	CHD1CK30B224
C1044	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C1045	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C1052	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C1053	ELECTROLYTIC CAP. 100μF/25V M	CE1EMASDL101
C1054	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
C1056	CHIP CERAMIC CAP.(1608) B K 0.1μF/50V	CHD1JK30B104
	CONNECTORS	
CN102	242 SERIES CONNECTOR 224202108W1	J322C08TG001
CN201	FFC CONNECTOR IMSA-9615S-11A-PP-A	JC96J11ER007
CN301	FFC CONNECTOR IMSA-9615S-29A-PP-A	JC96J29ER007
CN302	FFC CONNECTOR IMSA-9615S-29A-PP-A	JC96J29ER007
CN702	FFC CONNECTOR IMSA-9615S-29A-PP-A	JC96J29ER007
CN862A	242 SERIES CONNECTOR 224202104W1	J322C04TG001
CN1001⚠	CONNECTOR PRINT OSU KW05-120-02-00	J30502KET001
CN1002⚠	CONNECTOR PRINT OSU KW05-120-02-00	J30502KET001
	DIODES	
D201	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D202	IC SHUNT REGULATOR KIA431-AT/P	NSZBA0TJY036
D203	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D204	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D205	DIODE ZENER 24BSC-T26	NDTC024BST26
D206	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D207	DIODE ZENER 7V5BSA-T26	NDTA7R5BST26
D208	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D209	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D210	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D303	DIODE ZENER 5V6BSB-T26	NDTB5R6BST26
D401	DIODE FR104-B	NDLZ000FR104
D402	DIODE ZENER 10BSB-T26	NDTB010BST26
D404	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D405	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D406	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133

Ref. No.	Description	Part No.
D407	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D408	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D409	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D410	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D411	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D412	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D413	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D414	DIODE ZENER 6V2BSB-T26	NDTB6R2BST26
D416	DIODE ZENER 10BSB-T26	NDTB010BST26
D417	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D601⚠	DIODE 1N5397BD	NDL1001N5397
D602⚠	DIODE 1N5397BD	NDL1001N5397
D603⚠	DIODE 1N5397BD	NDL1001N5397
D604⚠	DIODE 1N5397BD	NDL1001N5397
D605	DIODE ZENER 4V3BSB-T26	NDTB4R3BST26
D606⚠	DIODE ZENER 27BSB-T26	NDTB027BST26
D607⚠	DIODE ZENER 39BSB-T26	NDTB039BST26
D608⚠	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D610	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D631	DIODE SCHOTTKY SB2A0BD	NDWZ000SB2A0
D632	DIODE SHOTTKY SB3200BR	NDWZ3200D027
D633⚠	DIODE ZENER 1ZB43BB	NDWZ0001ZB43
D636	DIODE FR104-B	NDLZ000FR104
D637⚠	DIODE ZENER 36BSB-T26	NDTB036BST26
D638	SCHOTTKY BARRIER DIODE SB240-B/P	NDWZ000SB240
D639	DIODE FAST RECOVERY FR151-B/P	NDWZ0FR151BP
D641	DIODE SCHOTTKY SB360BH	NDWZ000SB360
D642	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D643	FAST RECOVERY DIODE FR252	NDWZ000FR252
D645	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D646	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D648	DIODE ZENER HZS5.6NB2TE-EQ	QDTB0HZS5R6N
D649⚠	DIODE ZENER 3V3BSB-T26	NDTB3R3BST26
D650	DIODE ZENER 6V8BSA-T26	NDTA6R8BST26
D651	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D653	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D654	DIODE FR154	NDLZ000FR154
D655	DIODE FR154	NDLZ000FR154
D656	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D657	DIODE ZENER 4V7BSB-T26	NDTB4R7BST26
D659	SHUNT REGULATOR KIA431B-AT/P	NSZBA0TJY038
D660	WIRE CP STP-S-0.50	XZ40F0REN001
D662	IC SHUNT REGULATOR KIA431-AT/P	NSZBA0TJY036
D665	WIRE CP STP-S-0.50	XZ40F0REN001
D666	DIODE ZENER 10BSB-T26	NDTB010BST26
D668⚠	DIODE ZENER 27BSB-T26	NDTB027BST26
D670	SCHOTTKY BARRIER DIODE SB160	NDWZ000SB160
D804	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D805	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D808	DIODE ZENER 20BSB-T26	NDTB020BST26
D809	DIODE ZENER 20BSB-T26	NDTB020BST26
D1001	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1002	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1003	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1004	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1005	DIODE ZENER 6V2BSB-T26	NDTB6R2BST26
D1006	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1007	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1008	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1009	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1010	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1011	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1012	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133

Ref. No.	Description	Part No.
D1013	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1014	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1015	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1016	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1018	DIODE ZENER 10BSB-T26	NDTB010BST26
D1020	DIODE ZENER 5V1BSB-T26	NDTB5R1BST26
D1021	DIODE ZENER 15BSB-T26	NDTB015BST26
D1022	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1023	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1024	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1025	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1026	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1027	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1028⚠	DIODE ZENER 4V7BSB-T26	NDTB4R7BST26
D1029	DIODE ZENER 16BSB-T26	NDTB016BST26
D1030	DIODE ZENER 16BSB-T26	NDTB016BST26
D1034	DIODE ZENER 9V1BSB-T26	NDTB9R1BST26
D1036	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1037	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1038	WIRE CP STP-S-0.50	XZ40F0REN001
D1045	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
ICS		
IC201	IC TL3472CDR	NSZBA0TTY115
IC601⚠	PHOTO COUPLER LTV817MCF	NPECLTV817MF
IC631	IC LD1117V	NSZBA0SSS046
IC801	AUDIO AMP IC TDA1517P/N3 112	NSCA0SNXP003
IC803	IC OP AMP NJM4558M(TE1)-#ZZZB	QSZBA0TJR089
IC1001	IC PULSE-WIDTH-MODULATION CONT TL494CDR	NSCA0T0TY006
IC1002	IC OPERATIONNAL AMPLIFIER KIA358F-EL	NSZBA0TJY030
COILS		
L301	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
L302	CHIP INDUCTOR LK1608R22K-T	LLACKB3TUR22
L303	CHIP INDUCTOR LK1608R22K-T	LLACKB3TUR22
L601⚠	LINE FILTER 5.0MH 96005	LLBG00ZKT004
TRANSISTORS		
Q171	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q172	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q201	TRANSISTOR 2SD400(F)	QQUF002SD400
Q202	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q203	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q205	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q206	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q207	TRANSISTOR 2SC2655-Y(TE6 F M)	QQSY2SC2655F
Q208	TRANSISTOR 2SA1020-Y(TE6 F M)	QQSY2SA1020F
Q209	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q210	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q401	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q402	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q601⚠	FET MOS TK5A50D(FUNAI	QEWZTK5A50DQ
Q602⚠	TRANSISTOR 2SC2120-Y(TE2 F T)	QQSY2SC2120F
Q631	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q633	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q634	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q635	TRANSISTOR 2SC2120-Y(TE2 F T)	QQSY2SC2120F
Q636	TRANSISTOR 2SC2120-Y(TE2 F T)	QQSY2SC2120F
Q637	TRANSISTOR 2SC2120-Y(TE2 F T)	QQSY2SC2120F
Q638	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q639	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q640	NPN TRANSISTOR POWER 2SC4881F HFE MAX320	QQWZ2SC4881F
Q641	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q643	TRANSISTOR 2SA950-Y(TE2 F T)	QQSY02SA950F

Ref. No.	Description	Part No.
Q801	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1001	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1002	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1003	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1004	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1005⚠	FET MOS SMD TPC8214-H	QF2ZTPC8214H
Q1006	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q1007	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q1008	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1009	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1010	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1011	TRANSISTOR 2SA950-Y(TE2 F T)	QQSY02SA950F
Q1012	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1014	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1015	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1016	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1017	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1018	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
Q1019	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1023	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q1024	TRANSISTOR KTA1267-GR-AT/P	NQS1KTA1267P
RESISTORS		
R172	RES CARBON FILM T 1/4W J 22k Ω	RCX4223T1001
R175	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R176	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R201	METAL OXIDE FILM RES. 1W J 5.6 Ω	RN015R6ZU001
R202	CHIP RES. 1/10W F 9.1k Ω	RRXAFR5H9101
R203	CHIP RES. 1/10W F 510 Ω	RRXAFR5H5100
R204	CHIP RES. 1/10W F 2.2k Ω	RRXAFR5H2201
R205	CHIP RES. 1/10W J 1.5k Ω	RRXAJR5Z0152
R206	CHIP RES. 1/10W J 47k Ω	RRXAJR5Z0473
R207	RES CARBON FILM T 1/4W J 6.8k Ω	RCX4682T1001
R208	RES CARBON FILM T 1/4W J 6.8k Ω	RCX4682T1001
R209	CHIP RES. 1/10W J 56k Ω	RRXAJR5Z0563
R210	CHIP RES. 1/10W J 6.8k Ω	RRXAJR5Z0682
R211	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R212	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R213	CHIP RES. 1/10W J 27k Ω	RRXAJR5Z0273
R214	CHIP RES. 1/10W J 3.3k Ω	RRXAJR5Z0332
R215	RES CARBON FILM T 1/4W J 330 Ω	RCX4331T1001
R216	RES CARBON FILM T 1/4W J 2.7k Ω	RCX4272T1001
R217	RES CARBON FILM T 1/4W J 2.7k Ω	RCX4272T1001
R218	RES CARBON FILM T 1/4W J 8.2k Ω	RCX4822T1001
R219	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R220	CHIP RES. 1/10W J 47k Ω	RRXAJR5Z0473
R221	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R222	RES CARBON FILM T 1/4W J 120 Ω	RCX4121T1001
R223	RES CARBON FILM T 1/4W J 15k Ω	RCX4153T1001
R224	CHIP RES. 1/10W J 1 Ω	RRXAJR5Z01R0
R225	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R226	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R227	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R228	WIRE CP STP-S-0.50	XZ40F0REN001
R229	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R230	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R231	CHIP RES. 1/10W J 1.5k Ω	RRXAJR5Z0152
R232	CHIP RES. 1/10W J 15k Ω	RRXAJR5Z0153
R233	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R234	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R238	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R239	RES CARBON FILM T 1/4W J 150 Ω	RCX4151T1001
R240	RES CARBON FILM T 1/4W J 3.9k Ω	RCX4392T1001

Ref. No.	Description	Part No.
R302	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R303	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R304	CHIP RES. 1/10W J 56 Ω	RRXAJR5Z0560
R305	CHIP RES. 1/10W J 56 Ω	RRXAJR5Z0560
R313	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R401⚠	CHIP RES. 1/10W J 1 Ω	RRXAJR5Z01R0
R402	CHIP RES. 1/10W F 5.6k Ω	RRXAFR5H5601
R403	CHIP RES. 1/10W F 36k Ω	RRXAFR5H3602
R406	RES CARBON FILM T 1/4W J 47k Ω	RCX4473T1001
R407	CHIP RES. 1/10W J 47k Ω	RRXAJR5Z0473
R408	CHIP RES. 1/10W J 47k Ω	RRXAJR5Z0473
R409	CHIP RES. 1/10W J 2.2k Ω	RRXAJR5Z0222
R411	RES CARBON FILM T 1/4W J 22k Ω	RCX4223T1001
R412	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R413	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R601⚠	GLASS GLAZE RES. 1/2W J 1M Ω	RXX2JZLZ0105
R602	CEMENT RES. 3W K 1.2 Ω	RW031R2PG007
R603	RES CARBON FILM 1/4W J 390k Ω	RCX4394FS002
R604	RES CARBON FILM 1/4W J 390k Ω	RCX4394FS002
R605	RES CARBON FILM 1/4W J 390k Ω	RCX4394FS002
R606	RES CARBON FILM 1/4W J 330k Ω	RCX4334FS002
R607	RES CARBON FILM T 1/4W J 150 Ω	RCX4151T1001
R608	RES CARBON FILM T 1/4W J 150 Ω	RCX4151T1001
R609	RES CARBON FILM T 1/4W J 1.5k Ω	RCX4152T1001
R610⚠	METAL OXIDE FILM RES. 2W J 0.39 Ω	RN02R39ZU001
R611	RES CARBON FILM T 1/4W J 2.2k Ω	RCX4222T1001
R612	RES CARBON FILM T 1/4W J 220 Ω	RCX4221T1001
R631	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R632	RES CHIP.(1608) 1/10W D 1.1k Ω	RRXADR5H1101
R633	RES CHIP.(1608) 1/10W D 10k Ω	RRXADR5H1002
R634	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R635	RES CARBON FILM T 1/4W J 220 Ω	RCX4221T1001
R637	RES CARBON FILM T 1/4W J 220 Ω	RCX4221T1001
R638	RES CARBON FILM T 1/4W J 2.7k Ω	RCX4272T1001
R639	CHIP RES. 1/10W F 820 Ω	RRXAFR5H8200
R640	CHIP RES. 1/10W F 18k Ω	RRXAFR5H1802
R641	CHIP RES. 1/10W F 120 Ω	RRXAFR5H1200
R642	CHIP RES. 1/10W F 22k Ω	RRXAFR5H2202
R643	CHIP RES. 1/10W F 22k Ω	RRXAFR5H2202
R644	CHIP RES. 1/10W F 22k Ω	RRXAFR5H2202
R645	CHIP RES. 1/10W F 7.50 k Ω	RRXAFR5H7501
R646	CHIP RES. 1/10W F 820 Ω	RRXAFR5H8200
R647	CHIP RES. 1/10W J 47k Ω	RRXAJR5Z0473
R648	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R649⚠	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
R650	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
R651⚠	RES CARBON FILM T 1/4W J 15 Ω	RCX4150T1001
R652	WIRE CP STP-S-0.50	XZ40F0REN001
R653	CHIP RES. 1/10W F 820 Ω	RRXAFR5H8200
R654	CHIP RES. 1/10W F 820 Ω	RRXAFR5H8200
R655	WIRE CP STP-S-0.50	XZ40F0REN001
R656	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
R658	RES CARBON FILM T 1/4W J 2.7k Ω	RCX4272T1001
R659	RES. CARBON FILM J 1/2W J 2.7 Ω	RCX22R7T1003
R660	RES CHIP.(1608) 1/10W D 10k Ω	RRXADR5H1002
R661	RES CARBON FILM T 1/4W J 680 Ω	RCX4681T1001
R662	RES CARBON FILM T 1/4W J 39 Ω	RCX4390T1001
R663	RES CARBON FILM T 1/4W J 3.3 Ω	RCX43R3T1001
R664	RES CARBON FILM T 1/4W J 3.9 Ω	RCX43R9T1001
R665	RES CARBON FILM T 1/4W J 3.9 Ω	RCX43R9T1001
R666	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R667	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R668	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223

Ref. No.	Description	Part No.
R669	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R670	RES CARBON FILM T 1/4W J 270 Ω	RCX4271T1001
R671	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R672	METAL OXIDE RES. 1W J 0.18 Ω	RN01R18ZU001
R673	CHIP RES. 1/10W F 3.6k Ω	RRXAFR5H3601
R674	CHIP RES. 1/10W F 10k Ω	RRXAFR5H1002
R675	RES CARBON FILM T 1/4W J 1.0k Ω	RCX4102T1001
R676	RES CARBON FILM T 1/4W J 22 Ω	RCX4220T1001
R677	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R678	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R679	RES CARBON FILM T 1/4W J 10k Ω	RCX4103T1001
R681	CHIP RES. 1/10W F 820 Ω	RRXAFR5H8200
R682	WIRE CP STP-S-0.50	XZ40F0REN001
R683	METAL OXIDE FILM RES. 1W J 3.3 Ω	RN013R3ZU001
R684	METAL OXIDE FILM RES. 1W J 3.3 Ω	RN013R3ZU001
R685	CHIP RES. 1/10W F 620 Ω	RRXAFR5H6200
R686	CHIP RES. 1/10W F 1.0k Ω	RRXAFR5H1001
R688	RES CARBON FILM T 1/4W J 1.0 Ω	RCX41R0T1001
R689	RES CARBON FILM T 1/4W J 33 Ω	RCX4330T1001
R690	RES CARBON FILM T 1/4W J 3.3 Ω	RCX43R3T1001
R699	RES CARBON FILM T 1/4W J 56 Ω	RCX4560T1001
R803	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R804	CHIP RES. 1/10W J 8.2 Ω	RRXAJR5Z08R2
R805	CHIP RES. 1/10W J 8.2 Ω	RRXAJR5Z08R2
R806	WIRE CP STP-S-0.50	XZ40F0REN001
R807	WIRE CP STP-S-0.50	XZ40F0REN001
R808	CHIP RES. 1/10W J 4.7k Ω	RRXAJR5Z0472
R809	CHIP RES. 1/10W J 360 Ω	RRXAJR5Z0361
R810	CHIP RES. 1/10W J 12k Ω	RRXAJR5Z0123
R811	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R813	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R814	CHIP RES. 1/10W J 12k Ω	RRXAJR5Z0123
R815	CHIP RES. 1/10W J 470 Ω	RRXAJR5Z0471
R816	CHIP RES. 1/10W J 470 Ω	RRXAJR5Z0471
R817	CHIP RES. 1/10W J 18k Ω	RRXAJR5Z0183
R818	CHIP RES. 1/10W J 15k Ω	RRXAJR5Z0153
R819	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R820	CHIP RES. 1/10W J 4.7k Ω	RRXAJR5Z0472
R821	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R823	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R826	RES CARBON FILM T 1/4W J 10k Ω	RCX4103T1001
R830	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R834	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R836	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R837	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R838	RES CARBON FILM T 1/4W J 10k Ω	RCX4103T1001
R842	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R1001	RES CARBON FILM T 1/4W J 2.2k Ω	RCX4222T1001
R1002	RES CARBON FILM T 1/4W J 180 Ω	RCX4181T1001
R1003	RES CARBON FILM T 1/4W J 2.2k Ω	RCX4222T1001
R1004	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1005	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R1006	RES CARBON FILM T 1/4W J 180 Ω	RCX4181T1001
R1007	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R1008	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R1009	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R1010	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R1011	CHIP RES. 1/10W J 12k Ω	RRXAJR5Z0123
R1012	RES CARBON FILM T 1/4W J 27k Ω	RCX4273T1001
R1013	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R1014	RES CARBON FILM T 1/4W J 27k Ω	RCX4273T1001
R1015	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1017	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001

Ref. No.	Description	Part No.
R1018	CHIP RES. 1/10W J 390 Ω	RRXAJR5Z0391
R1019	CHIP RES. 1/10W J 390 Ω	RRXAJR5Z0391
R1020	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R1022	CHIP RES. 1/10W J 33k Ω	RRXAJR5Z0333
R1023	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1024	CHIP RES. 1/10W F 22k Ω	RRXAFR5H2202
R1025	CHIP RES. 1/10W J 1.5k Ω	RRXAJR5Z0152
R1026	RES CARBON FILM T 1/4W J 2.2k Ω	RCX4222T1001
R1027	CHIP RES. 1/10W J 5.1k Ω	RRXAJR5Z0512
R1028	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R1029	RES CARBON FILM T 1/4W J 1.8k Ω	RCX4182T1001
R1030	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R1031	RES CARBON FILM T 1/4W J 4.7k Ω	RCX4472T1001
R1032⚠	METAL OXIDE FILM RES. 2W J 0.33 Ω	RN02R33ZU001
R1035	CHIP RES. 1/10W F 1.0k Ω	RRXAFR5H1001
R1036	CHIP RES. 1/10W F 15k Ω	RRXAFR5H1502
R1037	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1038	CHIP RES. 1/10W J 240k Ω	RRXAJR5Z0244
R1039	CHIP RES. 1/10W F 68k Ω	RRXAFR5H6802
R1040	CHIP RES. 1/10W F 6.2k Ω	RRXAFR5H6201
R1041	CHIP RES. 1/10W F 1.0k Ω	RRXAFR5H1001
R1042	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R1043	CHIP RES. 1/10W F 5.1k Ω	RRXAFR5H5101
R1044	RES CARBON FILM T 1/4W G 5.1k Ω	RCX4512T1002
R1045	CHIP RES. 1/10W J 240k Ω	RRXAJR5Z0244
R1046	CHIP RES. 1/10W J 24k Ω	RRXAJR5Z0243
R1048	CHIP RES. 1/10W J 22k Ω	RRXAJR5Z0223
R1049	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R1050	CHIP RES. 1/10W J 390k Ω	RRXAJR5Z0394
R1051	CHIP RES. 1/10W J 390k Ω	RRXAJR5Z0394
R1052	CHIP RES. 1/10W F 100k Ω	RRXAFR5H1003
R1054	CHIP RES. 1/10W F 5.6k Ω	RRXAFR5H5601
R1055	CHIP RES. 1/10W F 51.0 k Ω	RRXAFR5H5102
R1056	CHIP RES. 1/10W F 100k Ω	RRXAFR5H1003
R1058	CHIP RES. 1/10W F 10k Ω	RRXAFR5H1002
R1059	CHIP RES. 1/10W F 10k Ω	RRXAFR5H1002
R1060	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1061	CHIP RES. 1/10W J 33k Ω	RRXAJR5Z0333
R1062	CHIP RES. 1/10W J 390k Ω	RRXAJR5Z0394
R1064	CHIP RES. 1/10W J 33k Ω	RRXAJR5Z0333
R1065	RES CARBON FILM T 1/4W J 2.7k Ω	RCX4272T1001
R1066	RES CARBON FILM T 1/4W J 2.7k Ω	RCX4272T1001
R1067	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R1068	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R1069	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R1070	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R1071	CHIP RES. 1/10W F 4.3k Ω	RRXAFR5H4301
R1072	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1073	CHIP RES. 1/10W F 1.2k Ω	RRXAFR5H1201
R1074	RES CARBON FILM T 1/4W J 100k Ω	RCX4104T1001
R1081	CHIP RES. 1/10W F 100k Ω	RRXAFR5H1003
R1082	CHIP RES. 1/10W F 68k Ω	RRXAFR5H6802
R1083	CHIP RES. 1/10W F 1M Ω	RRXAFR5H1004
R1084	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R1086	CHIP RES. 1/10W F 100k Ω	RRXAFR5H1003
R1087	CHIP RES. 1/10W F 68k Ω	RRXAFR5H6802
R1088	CHIP RES. 1/10W F 1M Ω	RRXAFR5H1004
R1089	CHIP RES. 1/10W F 12k Ω	RRXAFR5H1202
R1090	CHIP RES. 1/10W F 47.0 k Ω	RRXAFR5H4702
R1091	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R1092	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R1093	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R1094	RES CARBON FILM T 1/4W J 12k Ω	RCX4123T1001
R1095	RES CARBON FILM T 1/4W J 1.2k Ω	RCX4122T1001
R1099	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R1100	WIRE CP STP-S-0.50	XZ40F0REN001
R1105	CHIP RES. 1/10W J 3.3k Ω	RRXAJR5Z0332
R1106	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1107	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1108	WIRE CP STP-S-0.50	XZ40F0REN001
R1109	CHIP RES. 1/10W F 2.2k Ω	RRXAFR5H2201
R1110	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R1111	RES CARBON FILM T 1/4W J 10k Ω	RCX4103T1001
R1112	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1117	WIRE CP STP-S-0.50	XZ40F0REN001
R1118	RES CARBON FILM T 1/4W J 1.2 Ω	RCX41R2T1001
	MISCELLANEOUS	
AC601⚠	AC CORD PB8K9F9110A-057	WAC0172LW008
B13	HEAT SINK PMU A8A70UH	1EM324377
B14	POW HEAT SINK A7120UH	1EM423993
BC301	CHIP INDUCTOR BK1608HS601-T	LLC601NTU017
BC601	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC801	CHIP INDUCTOR BK1608HS601-T	LLC601NTU017
F601⚠	FUSE STC4A125V U/CT	PAGE20CW3402
FH601	FUSE HOLDER MSF-015 LF (B110)	XH01Z00LY002
FH602	FUSE HOLDER MSF-015 LF (B110)	XH01Z00LY002
JS304	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
JS305	WIRE CP STP-S-0.50	XZ40F0REN001
JS306	WIRE CP STP-S-0.50	XZ40F0REN001
JS801	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
JS802	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
JS803	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
JS804	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
JS1005	WIRE CP STP-S-0.50	XZ40F0REN001
JS1007	WIRE CP STP-S-0.50	XZ40F0REN001
JS1011	WIRE CP STP-S-0.50	XZ40F0REN001
JS1012	WIRE CP STP-S-0.50	XZ40F0REN001
L13	SCREW B-TIGHT D3X8 BIND HEAD+	GBJB3080
SA601⚠	SURGE ABSORBER 470V+-10PER	NVQZ10D471KB
T601⚠	TRANS POWER BCK-28-9923	LTT2PC0XB044
TM601	EYELET TYPE D-1	0VM406868
TM602	EYELET TYPE D-1	0VM406868
T1002⚠	TRANS INVERTER HVT-160	LTZ3PZ0XB014
TU302	TUNER UNIT ATSC TDAU4-D05A	UTNATS0AL002

JACK ASSEMBLY

Ref. No.	Description	Part No.
	JACK ASSEMBLY Consists of the following:	A01N0MJC-002
	JACK CBA ---------- FUNCTION CBA JUNCTION-A CBA JUNCTION-B CBA JUNCTION-C CBA	A01N0MJC-002-JK ---------- A01N0MJC-002-FNJN

JACK CBA

Ref. No.	Description	Part No.
	JACK CBA Consists of the following:	----------
	CAPACITORS	
C703	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C704	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C723	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C724	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105

Ref. No.	Description	Part No.
C731	CHIP CERAMIC CAP. CH J 39pF/50V	CHD1JJ3CH390
C732	CHIP CERAMIC CAP. CH J 39pF/50V	CHD1JJ3CH390
C733	CHIP CERAMIC CAP. CH J 39pF/50V	CHD1JJ3CH390
C734	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
C735	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
C736	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
C743	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C744	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C751	CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
C752	CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
C753	CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
C754	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
C755	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
C756	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
C757	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C758	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C771	ELECTROLYTIC CAP. 100μF/16V M H7	CE1CMAVSL101
C772	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C773	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C775	CHIP CERAMIC CAP.(1608) CH J 33pF/50V	CHD1JJ3CH330
C776	CHIP CERAMIC CAP.(1608) CH J 33pF/50V	CHD1JJ3CH330
C841	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C842	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C843	CHIP CERAMIC CAP.(1608) F Z 0.1μF/50V	CHD1JZ30F104
C845	CHIP CERAMIC CAP.(1608) CH J 33pF/50V	CHD1JJ3CH330
	CONNECTORS	
CN701	FFC CONNECTOR IMSA-9615S-29A-PP-A	JC96J29ER007
CN861A	242 SERIES CONNECTOR 224202104W1	J322C04TG001
	DIODES	
D701	ZENER DIODE EDZTE618.2B	QD1B00EDZ8R2
D702	ZENER DIODE EDZTE618.2B	QD1B00EDZ8R2
D703	ZENER DIODE EDZTE618.2B	QD1B00EDZ8R2
D704	ZENER DIODE EDZTE618.2B	QD1B00EDZ8R2
D705	DIODE ZENER 8V2BSB-T26	NDTB8R2BST26
D706	DIODE ZENER 8V2BSB-T26	NDTB8R2BST26
D707	ZENER DIODE EDZTE618.2B	QD1B00EDZ8R2
D708	ZENER DIODE EDZTE618.2B	QD1B00EDZ8R2
D709	DIODE ZENER 8V2BSB-T26	NDTB8R2BST26
D710	ZENER DIODE EDZTE618.2B	QD1B00EDZ8R2
	IC	
IC771	IC SWITCHING TC4052BF(ELNF)	QSZBA0TTS162
	COILS	
L851	WIRE CP STP-S-0.50	XZ40F0REN001
L852	WIRE CP STP-S-0.50	XZ40F0REN001
L853	WIRE CP STP-S-0.50	XZ40F0REN001
	TRANSISTORS	
Q722	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q771	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q773	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q774	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
Q841	TRANSISTOR KTC3199-GR-AT/P	NQS4KTC3199P
	RESISTORS	
R711	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R712	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R717	CHIP RES. 1/10W J 56k Ω	RRXAJR5Z0563
R718	CHIP RES. 1/10W J 56k Ω	RRXAJR5Z0563
R721	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R722	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R727	CHIP RES. 1/10W J 56k Ω	RRXAJR5Z0563
R728	CHIP RES. 1/10W J 56k Ω	RRXAJR5Z0563
R731	CHIP RES.(1608) 1/10W F 75 Ω	RRXAFR5H75R0
R732	CHIP RES.(1608) 1/10W F 75 Ω	RRXAFR5H75R0

Ref. No.	Description	Part No.
R733	CHIP RES.(1608) 1/10W F 75 Ω	RRXAFR5H75R0
R734	CHIP RES. 1/10W J 10 Ω	RRXAJR5Z0100
R735	CHIP RES. 1/10W J 10 Ω	RRXAJR5Z0100
R736	CHIP RES. 1/10W J 10 Ω	RRXAJR5Z0100
R741	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R742	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R747	CHIP RES. 1/10W J 56k Ω	RRXAJR5Z0563
R748	CHIP RES. 1/10W J 56k Ω	RRXAJR5Z0563
R751	CHIP RES. 1/10W J 75 Ω	RRXAJR5Z0750
R752	CHIP RES. 1/10W J 75 Ω	RRXAJR5Z0750
R753	CHIP RES. 1/10W J 75 Ω	RRXAJR5Z0750
R754	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R755	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R756	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R757	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R758	RES CARBON FILM T 1/4W J 10 Ω	RCX4100T1001
R763	RES CARBON FILM T 1/4W J 56k Ω	RCX4563T1001
R764	CHIP RES. 1/10W J 56k Ω	RRXAJR5Z0563
R772	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R773	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R774	RES CARBON FILM T 1/4W J 10k Ω	RCX4103T1001
R775	RES CARBON FILM T 1/4W J 10k Ω	RCX4103T1001
R780	CHIP RES. 1/10W J 82k Ω	RRXAJR5Z0823
R781	CHIP RES. 1/10W J 82k Ω	RRXAJR5Z0823
R782	RES CARBON FILM T 1/4W J 82k Ω	RCX4823T1001
R783	CHIP RES. 1/10W J 82k Ω	RRXAJR5Z0823
R784	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R785	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R786	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R787	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R788	RES CARBON FILM T 1/4W J 82k Ω	RCX4823T1001
R789	RES CARBON FILM T 1/4W J 82k Ω	RCX4823T1001
R790	CHIP RES. 1/10W J 82k Ω	RRXAJR5Z0823
R791	CHIP RES. 1/10W J 82k Ω	RRXAJR5Z0823
R792	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R793	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R794	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R795	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R796	CHIP RES. 1/10W J 2.2k Ω	RRXAJR5Z0222
R797	CHIP RES. 1/10W J 2.2k Ω	RRXAJR5Z0222
R843	CHIP RES. 1/10W J 110 Ω	RRXAJR5Z0111
R844	CHIP RES. 1/10W J 220 Ω	RRXAJR5Z0221
R845	CHIP RES. 1/10W J 100k Ω	RRXAJR5Z0104
R846	CHIP RES. 1/10W J 100 Ω	RRXAJR5Z0101
R847	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R848	CHIP RES. 1/10W J 10k Ω	RRXAJR5Z0103
R851	RES CARBON FILM T 1/4W J 180 Ω	RCX4181T1001
R852	RES CARBON FILM T 1/4W J 180 Ω	RCX4181T1001
	MISCELLANEOUS	
BC771	BEADS INDUCTOR FBR07HA121SB-00	LLBF00STU030
BC841	CHIP INDUCTOR BK1608HS601-T	LLC601NTU017
JK711	JACK HPEP SML PCB S PJ-358H	JXSJ020YUQ01
JK721	JACK RCA PCB S WHITE 01/RCA-101H(WH)	JXRJ010YUQ02
JK722	JACK RCA PCB S RED 01/RCA-101H(RD)	JXRJ010YUQ01
JK731	JACK RCA PCB S GREEN 01/RCA-101H(GN)	JXRJ010YUQ03
JK732	JACK RCA PCB S BLUE 01/RCA-101H(BL)	JXRJ010YUQ04
JK733	JACK RCA PCB S RED 01/RCA-101H(RD)	JXRJ010YUQ01
JK741	JACK RCA PCB S WHITE 01/RCA-101H(WH)	JXRJ010YUQ02
JK742	JACK RCA PCB S RED 01/RCA-101H(RD)	JXRJ010YUQ01
JK751	JACK SW DIN PCB L DIN-435C(777D)	JYEL040YUQ03
JK752	JACK RCA PCB L RCA-101S(1)-03	JXRL010YUQ12
JK753	JACK RCA PCB L RCA-101S(1)-04	JXRL010YUQ13

Ref. No.	Description	Part No.
JK754	JACK SW RCA PCB L RCA-102F(RD)	JYRL010YUQ05
JK841	JACK RCA PCB S ORANGE 01/RCA-101H(OR)	JXRJ010YUQ06
JK851	JACK SW HPEP SML PCB L PJ-350	JYSL010YUQ03
JS701	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000

FUNCTION CBA

Ref. No.	Description	Part No.
	FUNCTION CBA Consists of the following:	----------
	CAPACITORS	
C103	ELECTROLYTIC CAP. 47μF/16V M H7	CE1CMAVSL470
C104	CHIP CERAMIC CAP. B K 330pF/50V	CHD1JK30B331
C107	CHIP CERAMIC CAP. (1608) F Z 1μF/16V	CHD1CZ30F105
C108	CAP CERAMIC (AX) 0.1μF/50V/F/Z	CA1J104TU062
C109	CAP CERAMIC (AX) 0.1μF/50V/F/Z	CA1J104TU062
	DIODES	
D101	ZENER DIODE EDZTE61 6.8B	QD1B00EDZ6R8
D103	LED L-53HT	NP4Z000L53HT
D104	LED GREEN 333GT/E(FNA)	NPWZ33GTEFNA
D105	CAP CERAMIC (AX) 0.1μF/50V/B/K	CA1J104TU061
	RESISTORS	
R106	RES CARBON FILM T 1/4W J 100 Ω	RCX4101T1001
R107	CHIP RES. 1/10W J 3.3k Ω	RRXAJR5Z0332
R108	CHIP RES. 1/10W J 220 Ω	RRXAJR5Z0221
R109	CHIP RES. 1/10W J 220 Ω	RRXAJR5Z0221
R110	CHIP RES. 1/10W J 1k Ω	RRXAJR5Z0102
R111	CHIP RES. 1/10W F 18k Ω	RRXAFR5H1802
R112	CHIP RES. 1/10W F 8.2k Ω	RRXAFR5H8201
R113	CHIP RES.(1608) 1/10W F 4.7k Ω	RRXAFR5H0472
R114	CHIP RES. 1/10W F 2.7k Ω	RRXAFR5H2701
R115	CHIP RES.(1608) 1/10W F 4.7k Ω	RRXAFR5H0472
R116	RES CARBON FILM T 1/4W J 220 Ω	RCX4221T1001
R118	CHIP RES. 1/10W F 10k Ω	RRXAFR5H1002
	SWITCHES	
SW104	TACT SWITCH SKHHLMA010	SST0101AL049
SW105	TACT SWITCH SKHHLMA010	SST0101AL049
SW106	TACT SWITCH SKHHLMA010	SST0101AL049
SW107	TACT SWITCH SKHHLMA010	SST0101AL049
SW108	TACT SWITCH SKHHLMA010	SST0101AL049
SW109	TACT SWITCH SKHHLMA010	SST0101AL049
	MISCELLANEOUS	
RS101	SENSOR REMOTE RECEIVER KSM-712TH2E	USESJRSKK044

JUNCTION-A CBA

Ref. No.	Description	Part No.
	JUNCTION-A CBA Consists of the following:	----------
	CONNECTOR	
CN101	242 SERIES CONNECTOR TUC-P08X-B1 WHT ST	JCTUB08TG002
	MISCELLANEOUS	
CL101	WIRE ASSEMBLY 8PIN 8PIN 100MM	WX1A94N0-001

JUNCTION-B CBA

Ref. No.	Description	Part No.
	JUNCTION-B CBA Consists of the following:	----------
	CONNECTOR	
CN862B	242 SERIES CONNECTOR TUC-P04X-B1 WHT ST	JCTUB04TG002
	MISCELLANEOUS	
CL862	WIRE ASSEMBLY 2PIN 2PIN 70MM	WX1A94N0-002

JUNCTION-C CBA

Ref. No.	Description	Part No.
	JUNCTION-C CBA Consists of the following:	----------
	CONNECTOR	
CN861B	242 SERIES CONNECTOR TUC-P04X-B1 WHT ST	JCTUB04TG002
	MISCELLANEOUS	
CL861	WIRE ASSEMBLY 2PIN 2PIN 70MM	WX1A94N0-002

PARTS LIST [LC190EM1 (Serial No. : DS3A)]

Mechanical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
A6⚠	RATING LABEL A01N9UH	---------
LCD1	LCD MODULE 18.5INCH WIDE CPT 18.5INCH WXGA	UH19PXA

Electrical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
	DIGITAL MAIN CBA UNIT	A01N9MMA-002
	MAIN CBA	A01N9MPWA001
CN1001	CONNECTOR/JACK 1747386-1	JB17J02AP002
CN1002	CONNECTOR/JACK 1747386-1	JB17J02AP002

PARTS LIST [LC190EM1 (Serial No. : TH1A)]

Mechanical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
	STAND ASSEMBLY A01N6UT	1ESA24415
A6⚠	RATING LABEL A01N6UT	---------
L17	STAND SCREW KIT A01N6UT	1ESA24406
S1	CARTON A01N6UT	1EM431822
S2	STYROFOAM TOP A91N8UT	1EM024305
S3	STYROFOAM BOTTOM A91N8UT	1EM024306
S4	SET BAG A81N0UH	1EM323958A
X2⚠	OWNERS MANUAL A01N6UT	1EMN26401
X6	QUICK START GUIDE A01N6UT	1EMN26402
X8	CHILD SAFETY SHEET A91N8UT	1EMN25041

Electrical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1(Serial No : DS1A).

There are no different parts from the original model LC190EM1(Serial No : DS1A).
Refer to the parts list for the original model LC190EM1(Serial No : DS1A).

PARTS LIST [19MF330B/F7 (Serial No. : DS1A)]

Mechanical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
	STAND ASSEMBLY A01N0UH	1ESA23435
A1	FRONT CABINET A91N0UH	1EM123294
A3	CONTROL PLATE A91N0UH	1EM325762
A5	DECORATION PLATE A01N0UH	1EM224284
A6⚠	RATING LABEL A01N0UH	---------
A14	POP LABEL A01N0UH	---------
A16	Not used	
L17	STAND SCREW KIT A91N0UH	1ESA19876
S1	CARTON A01N0UH	1EM430941
X2⚠	OWNERS MANUAL A01N0UH/A0170UH	1EMN26263
X3	REMOTE CONTROL NF804UD	NF804UD
X6	QUICK START GUIDE A01N0UH	1EMN26264
X8	CHILD SAFETY SHEET A94F0UH	1EMN24439

Electrical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
	DIGITAL MAIN CBA UNIT	A01N0MMA-001

		20100802	
		19MF330B/F7(A01NGUH)(Serial No.: DS3A)	
Different parts from the original model LC190EM1(Serial No.: DS1A)			
Ref. No.		Description	Parts No.
MECHANICAL PARTS			
		STAND ASSEMBLY A01N0UH	1ESA23435
A1		FRONT CABINET A91N0UH	1EM123294A
A3		CONTROL PLATE A91N0UH	1EM325762
A5		DECORATION PLATE A01N0UH	1EM224284
A6!		RATING LABEL A01NGUH	----------
A14		POP LABEL A01N0UH	----------
A16		Not used	
B44		THERMAL SHEET TMS-14-20 12X12	XK10000X4011
L17		STAND SCREW KIT A91N0UH	1ESA19876
LCD1		LCD MODULE 18.5INCH WIDE CPT 18.5INCH WXGA	UJ19PXA
S1		CARTON A01N0UH	1EM430941
X2!		OWNERS MANUAL A01N0UH/A0170UH	1EMN26263
X3		REMOTE CONTROL NF804UD	NF804UD
X6		QUICK START GUIDE A01N0UH	1EMN26264
X8		CHILD SAFETY SHEET A94F0UH	1EMN24439
ELECTRICAL PARTS			
		DIGITAL MAIN CBA UNIT	A01NGMMA-002

PARTS LIST [LC190SL1 (Serial No. : DS1A)]

Mechanical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
A1	FRONT CABINET A91N3UH	1EM023685
A6⚠	RATING LABEL A01N3UH	---------
L17	STAND SCREW KIT A91N0UH	1ESA19876
S1	CARTON A01N3UH	1EM430943
X2⚠	OWNERS MANUAL A01N3UH	1EMN26205
X6	QUICK START GUIDE A01N3UH	1EMN26266

Electrical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1(Serial No : DS1A).

There are no different parts from the original model LC190EM1(Serial No : DS1A).
Refer to the parts list for the original model LC190EM1(Serial No : DS1A).

PARTS LIST [LC190SL1 (Serial No. : TH1A)]

Mechanical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
	STAND ASSEMBLY A01N6UT	1ESA24415
A1	FRONT CABINET A91N3UH	1EM023685
A6⚠	RATING LABEL A01N5UT	---------
L17	STAND SCREW KIT A01N6UT	1ESA24406
S1	CARTON A01N5UT	1EM431821
S2	STYROFOAM TOP A91N8UT	1EM024305
S3	STYROFOAM BOTTOM A91N8UT	1EM024306
S4	SET BAG A81N0UH	1EM323958A
X2⚠	OWNERS MANUAL A01N5UT	1EMN26399
X6	QUICK START GUIDE A01N5UT	1EMN26400
X8	CHILD SAFETY SHEET A91N8UT	1EMN25041

Electrical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1(Serial No : DS1A).

There are no different parts from the original model LC190EM1(Serial No : DS1A).
Refer to the parts list for the original model LC190EM1(Serial No : DS1A).

PARTS LIST [LC190SL1 (Serial No. : TH2A)]

Mechanical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
	STAND ASSEMBLY A01N6UT	1ESA24415
A1	FRONT CABINET A91N3UH	1EM023685
A6⚠	RATING LABEL A01N5UT	---------
CL861	WIRE ASSEMBLY 2PIN 2PIN/75MM/AWG 26	WX1A01N0-002
CL862	WIRE ASSEMBLY 2PIN 2PIN/75MM/AWG 26	WX1A01N0-002
L17	STAND SCREW KIT A01N6UT	1ESA24406
S1	CARTON A01N5UT	1EM431821
S2	STYROFOAM TOP A91N8UT	1EM024305
S3	STYROFOAM BOTTOM A91N8UT	1EM024306
S4	SET BAG A81N0UH	1EM323958A
X2⚠	OWNERS MANUAL A01N5UT	1EMN26399
X6	QUICK START GUIDE A01N5UT	1EMN26400
X8	CHILD SAFETY SHEET A91N8UT	1EMN25041

Electrical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
	DIGITAL MAIN CBA UNIT	A01NDMMA-002
	MAIN CBA	A01NDMPWA001
CN102	PH CONNECTOR TOP 8P B8B-PH-K-S (LF)(SN)	J3PHC08JG029
CN862A	Not used	
CN872	PH CONNECTOR TOP 2P B2B-PH-K-S (LF)(SN)	J3PHC02JG029
	JACK ASSEMBLY Consists of the following	A01NDMJC-001
	JACK CBA(MJC-A) FUNCTION CBA(MJC-B)	A01NDMJC-001-JK A01NDMJC-001-FN
	JACK CBA(MJC-A)	---------
CN861A	Not used	
CN871	PH CONNECTOR TOP 2P B2B-PH-K-S (LF)(SN)	J3PHC02JG029
	FUNCTION CBA(MJC-B)	---------
CL101	WIRE ASSEMBLY 8PIN 8PIN/100MM/AWG 26	WX1A01N0-001
	JUNCTION-A CBA (In this model, the JUNCTION-A CBA is not used.)	
CN101	Not used	
CL101	Not used	
	JUNCTION-B CBA (In this model, the JUNCTION-B CBA is not used.)	
CN862B	Not used	
CL862	Not used	
	JUNCTION-C CBA (In this model, the JUNCTION-C CBA is not used.)	
CN861B	Not used	
CL861	Not used	

PARTS LIST [LC190SS1]

Mechanical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
A1	FRONT CABINET A91N1UH	1EM123295
A3	CONTROL PLATE A91N0UH	1EM325762
A5	DECORATION PLATE A01N1UH	1EM223923
A6⚠	RATING LABEL A01N1UH	---------
A14	POP LABEL A01N0UH	---------
A16	Not used	
S1	CARTON A01N1UH	1EM430942
X2⚠	OWNERS MANUAL A01N1UH/A0171UH	1EMN26204
X3	REMOTE CONTROL NH200UD	NH200UD
X6	QUICK START GUIDE A01N1UH	1EMN26265

Electrical Parts

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---------) are not available.

Different parts from the original model LC190EM1 (Serial No. : DS1A)

Ref. No.	Description	Part No.
	DIGITAL MAIN CBA UNIT	A01N1MMA-001

REVISION HISTORY

Chassis FL10.0

- 2010-03-10 LC190EM1 (Serial No. : DS1A) added
- 2010-03-18 LC190SL1 (Serial No. : DS1A) added
- 2010-04-08 19MF330B/F7 (Serial No. : DS1A) added
- 2010-04-08 LC190SS1 added
- 2010-04-23 LC190EM1 (Serial No. : TH1A) added
- 2010-04-23 LC190SL1 (Serial No. : TH1A) added
- 2010-04-23 Corrected the ELECTRICAL PARTS LIST { [LC190SL1 (Serial No. : DS1A)] on page 14-10, [19MF330B/F7] on page 14-12, [LC190SS1] on page 14-14 }
  ("POWER SUPPLY CBA" → "MAIN CBA")
- 2010-05-21 LC190EM1 (Serial No. : DS3A) added
- 2010-07-06 LC190SL1 (Serial No. : TH2A) added
- TBD LC190SL1 (Serial No. : DS2A) added
- TBD LC190EM1 (Serial No. : DS4A) added
- TBD 19MF330B/F7 (Serial No. : DS3A) added